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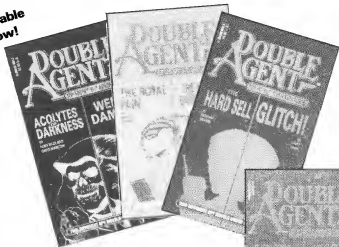
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Reflections



Robert Silverberg

"Positive feedback" — that's what we all want, right? Smiles, applause, praise — all that good stuff. Who would object to positive feedback? It's *positive*, isn't it?

Yes. But "positive" doesn't necessarily mean "good." In the case of the catchphrase "positive feedback," what we're dealing with is a scientific term that has undergone some corruption as it passed into popular speech. And the result is a distortion of what the extraordinary man who gave it to us had in mind.

Who coined the term "feedback" is a matter of some etymological dispute. But there is little doubt that we owe its popularization to the American mathematician and philosopher Norbert Wiener (1894-1964), author of *Cybernetics* and *The Human Use of Human Beings*.

Wiener, a prodigy who learned to read by the time he was three and had a Ph.D. in mathematics from Harvard at the age of 18, spent most of his life as a member of the faculty at the Massachusetts Institute of Technology. In 1940 he became interested in the development of "thinking machines" — what we call computers today — and that led him, during World War II, to a study of control devices for anti-aircraft guns. The entire problem of automatic control would concern him, in an increasingly profound way, for the rest of his life.

His concern centered on the concept of feedback: the effect on a system caused by a return of some of its out-

put.

The ordinary house thermostat is an example of a device that keeps itself operating correctly through the use of feedback. The thermostat is set to maintain a desired temperature in a house, and is equipped with sensors that constantly tell it whether the temperature is above or below the desired level. If the temperature in the house is too low, the thermostat sends a signal to the furnace, telling it to get things going. Eventually, this will drive the house temperature above the desired maximum. The thermostat, detecting this consequence of its earlier order, will send a countermanding order and shut the furnace down until the temperature has dropped below the set figure once again.

Another classic feedback device is the governor of a steam engine: two balls mounted on pendulum rods and swinging on opposite sides of a rotating shaft. The speed at which the shaft turns imparts a centrifugal action: when the shaft is turning quickly, the rods will rise and the balls will swing outward. If the speed of the shaft exceeds the desired maximum, the position of the rods will close the engine's intake valves and cause the rods to drop; if the engine slows down too much and the control balls drop too far, the governor will send a signal that opens the valves and gets things moving again. Thus conditions in the system are constantly *fed back* to the control device so that the system is able to regulate itself and maintain the

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correct level of operation.

What reaches the thermostat, or the steam-engine governor, or any other kind of control device, is quantitative information: the amount of departure from the desired condition. It can be expressed as a negative quantity: "The temperature is minus three degrees from optimum in this room." The appropriate response is to alter whatever the system is doing: if the room is three degrees too warm, the furnace must be shut down, and if it is three degrees too cold, the furnace must be turned on. Either way, the effect of the feedback is to oppose whatever the system may currently be doing; and so it can be termed *negative feedback*.

When Norbert Wiener went on to develop his studies of feedback into broader considerations of advanced automatic control devices and man/machine interaction, the concept of negative feedback was at the heart of his theories. Negative feedback, he wrote, is the essential stabilizing factor that allows all self-regulating devices (including the human brain) to correct undesirable situations.

And *positive feedback*?

It does the opposite, obviously. Positive feedback is an input of information that tends to increase a system's deviation from the optimum — i.e., to make a bad situation worse. It does this by supporting, rather than negating, whatever the system is already doing. In electronic terms, it is the information that tends to increase the net gain of an amplifier — that is to say, to turn things up, and up, and up and up and up. The nasty squealing noise that you hear when two microphones are brought close together is a feedback effect — *positive feedback*.

So much for the scientific background. Now that the concept of

feedback is loose in everyday chatter, the underlying conceptual purity is being buried under semantic distortion. Everyone knows that "positive" is good and "negative" is bad. That isn't so in physics — nobody would seriously argue that electrons, which carry a negative charge, are nastier particles than protons — but in non-technical use the words have different shadings. To most people, "positive feedback" is praise, constructive criticism, the good old hearty slap on the back. And "negative feedback" is grumbling, hostility, general obstreperousness. Given your choice, which would you rather have?

And yet — and yet — which is really more valuable?

I think that if we were to cast our loose metaphorical use of these notions aside and return to Norbert Wiener's original way of thinking, we'd see that negative feedback is still the key to effective functioning, whether employed in our thermostats, our steam engines, or our daily lives. The properly functioning human being, like the properly functioning thermostat, must constantly monitor the surrounding environment and make decisions on the basis of the information that's coming in. If we are told what we want to hear, rather than what we need to know, then our decisions are apt to lead us farther and farther from where we need to be.

Imagine a device on the dashboard of your car, for instance, that tells you when you're driving too quickly or too close to the car in front of you. It constantly monitors the distance between you and surrounding cars, and when you come within a pre-set danger zone, a voice will tell you, "You're only four car-lengths away from the car ahead of you now. Better slow down a little." If you keep on

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speeding forward, the voice will warn you, "Three car-lengths now. You're much too close." And if you don't respond even then, the gadget will send an electronic message to your car's engine that will slow your speed no matter how hard you want to hit your accelerator.

That's negative feedback at work.

And positive feedback? Well, imagine a different kind of device that tells you nothing but what a great driver you are. "You took that curve like a champ. . . . You can really handle these speeds, all right. . . . Now let's see you drive even faster. . . . Hey, that's it! You're leaving all the traffic way behind. . . . Wow, you showed *him* a thing or two, didn't you? . . . You ought to sign up for the Indianapolis 500!" And so on and so on, a constant stream of reassurance and encouragement, right up to the moment when the ambulance arrives.

The next time you tell someone how much you appreciate the positive feedback you're getting, pause a moment and reflect on the original meaning of the phrase, and how it has become garbled in popular use. Like the hedgehogs that the inhabitants of Wonderland were trying to use a croquet balls, words and concepts have a way of getting up and moving around as they please, and there's not much we can do about it. But I think we are all the losers when they do. ❶

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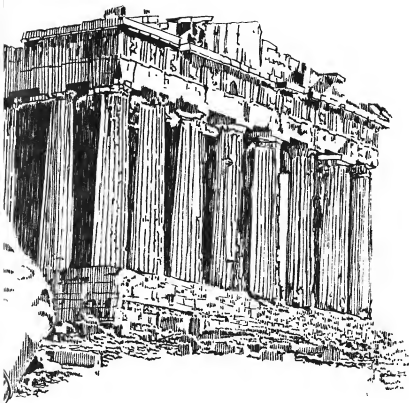
you move to the quietest music
and describe for me the arrangement
of molecules.
you see the air as I cannot,
you see it slip and rush, you see it surge —
not blue, i mean, not clouds.
you know the dance of armadillos,
and you have hidden the moss agate
and the opal within the stone.
to your hand, and above you, fly eagles.

i am without grace,
living on hyacinths and ignorance
among the manatee.
i work in sediment, laying secret images
of bone with shattered quartz
in layers in layers.
mine are the coarse histories
of raven and boar. i bring you these,
and the memories of sand.
i bear the crying tides.

you send the meerkat to amuse me.
i will leash the wolf as you walk by.

— W. Gregory Stewart





COUNTING POTSDERDS

by Harry Turtledove

art: Jean Elizabeth Martin

Harry Turtledove has recently had two new novels published: Noninterference (Del Rey) and A Different Flesh (Congdon & Weed/Contemporary); the second novel was published as part of the Isaac Asimov Presents book line.

"Counting Potsherds" will also appear in the alternate-world anthology Failed Events, edited by Gregory Benford and Martin H. Greenberg and published by Bantam-Spectra.

The ship clung close to land, like a roach scuttling along a wall. When at last the coast veered north and west, the ship conformed, steering-oars squealing in their sockets and henna-dyed wool sail billowing as it filled with wind to push the vessel onto its new course.

When the ship had changed direction, the eunuch Mithredath summoned the captain to the starboard rail with a slight nod. "We draw near, then, Agbaal?" Mithredath asked. His voice, a nameless tone between tenor and contralto, was cool, precise, intelligent.

The Phoenician captain bowed low. The sun sparked off a silver hoop in his left ear. "My master, we do." Agbaal pointed to the headland the ship had just rounded. "That is the cape of Sounion. If the wind holds, we should be in Peiraeus by evening — a day early," he added slyly.

"You will be rewarded if we are," Mithredath promised. Agbaal, satisfied, bowed again and, after glancing at his important passenger for permission, went back to overseeing his crew.

Mithredath would have paid gold darics from his own purse to shorten the time he spent away from the royal court, but no need for that: he was come to this western backwater at the royal command, and so could draw upon the treasury of Khrrish King of Kings as he required. Not for the first time, he vowed he would not stint.

The day was brilliantly clear. Mithredath could see a long way. The only other ships visible were a couple of tiny fishing boats and a slow, wallowing vessel probably full of wheat from Egypt. Gulls mewed and squawked overhead.

Mithredath tried to imagine what the narrow, island-flecked sea had looked like during those great days four centuries before, when the first Khrrish, the Conqueror, had led his huge fleet to the triumph that subjected the western Yauna to Persia once for all. He could not; he was not used enough to ships to picture hordes of them all moving together like so many sheep in a herd on its way to the marketplace of Babylon.

That thought, he realized with a wry nod, showed him what he was most familiar with: the baking but oh so fertile plain between the Tigris and Euphrates. He also knew Ektabana well, the summer capital of the King of Kings, nestled in the shade of Mount Aurvant, though he had never suffered through a winter there. But until this journey, he had never thought to

travel on the sea.

Yet to his surprise, Mithredath was finding a strange sort of beauty here. The water over which he sailed was a blue deep enough almost to be wine-purple, the sky another blue so different as to make him wonder how the same word could apply to both. The land rising steeply from sea to sky was by turns rocky and bare and shaggy with green-gray olive trees. The combination was peculiar but somehow, in its own way, harmonious.

True to his promise, Agbaal brought Mithredath to his destination with the sun still in the sky. True to his, the eunuch passed a pair of gold pieces into the captain's palm. Agbaal bowed almost double; his swarthy face glowed with pride when Mithredath offered him a cheek to kiss, as if the two of them were near in rank.

The docks swarmed with the merchant folk of the Western Sea: Phoenicians like Agbaal in turbans, tunics, and mantles; Italians wearing long white robes draped over one shoulder; and, of course, the native Yauna or, as they called themselves, Hellenes. Their slightly singsong speech was even more to be heard than Aramaic, the Empire's common tongue understood everywhere from India to the edges of the Gallic lands.

Mithredath's rich brocaded robes, the gold bracelets on his wrists, and the piles of baggage his servants brought onto the docks drew touts — as a honey-pot draws flies, he thought sourly. He picked a fellow whose Aramaic had less of a Hellenic hiss to it than most, said, "Be so good as to lead me to the satrap's palace."

"Of course, my master," the man said, but his face fell. He would still get his fee from Mithredath, but had just had his hopes dashed of collecting another from the innkeeper upon whom he would have foisted Mithredath. Too bad, Mithredath thought.

He was used to Babylon's sensible grid of streets; these small western towns had their narrow, stinking lanes running every which way — and sometimes abruptly petering out. He was glad he had hired a guide; no one not familiar with these alleys from birth could have found his way through them.

Though larger than its neighbors, the satrap's residence — palace, Mithredath discovered, was far too grand a word — looked like any other house hereabouts. It presented a plain, whitewashed front to the world. Mithredath sniffed. To his way of thinking, anyone who *was* someone should let the world know it.

He paid the guide — well enough to keep him from sneering, but not extravagantly — and rapped on the door with his pomegranate-headed walking stick. A moment later, a guard opened the little eye-level observation window to peer out at him. "Who comes?" the fellow demanded fiercely.

Mithredath stood where the man could see him clearly, and answered not with the accented Aramaic in which he had been challenged but in pure, clear Persian:

"I am Mithredath, *saris*" — somehow, in his own tongue, *eunuch* became almost a word of pride — "and servant to Khshish King of Kings, king of lands containing many men, king in this great earth far and wide, son of Marduniya the king, an Achaemenid, a Persian, son of a Persian, of Aryan seed. May Ahuramazda smile upon him and make long his reign. I am come to the satrapy of the Yauna of the western mainland upon a mission given me from his own royal lips. I would discuss this with your master, the satrap Vahauka."

He folded his arms across his chest and waited.

He did not wait long. He heard a thump on the other side of the door and guessed the guard had dropped his spear in surprise. Mithredath did not smile. Years at the court of the King of Kings had schooled him against revealing his thoughts to a dangerous world. His face was perfectly composed when the guard flung the door wide and shouted, "Enter, servant of the King of Kings!"

The guard bowed low. Mithredath walked past him, returning his courtesy with a bow barely more than a nod. Some people, he thought, deserved to be reminded from time to time of their station.

As he had intended, more folk in the satrap's residence than the door guard heard his announcement. A majordomo came rushing to greet him in the outer hall. He wore the rectangular mantle of a Hellene over Persian trousers. His bow Mithredath returned in full; he would be a power in this miniature court.

The majordomo said, "Excellent *saris*" — he was a cautious one too, Mithredath thought, again not smiling — "his highness Vahauka, great satrap of the Yauna of the western mainland, now dines with the secretary, with the *ganzabara* of the satrapy, and with the general of the garrison. He bids you join them, if your long journey from the court of the King of Kings, may Ahuramazda smile upon him and make long his reign, has not left you too tired."

"The gracious invitation honors me," Mithredath said. "I accept with pleasure." He was glad to get the chance to meet the *ganzabara* so soon; the financial official was the one who would have to meet his tablet of credit from the court.

"Come this way, then." The majordomo led Mithredath out to the central courtyard, where the satrap and his officers were dining. Here at last the eunuch felt himself among Persians again, for most of the courtyard was given over to a proper paradise, a formal garden of roses, tulips, and other bright blooms. Their fragrances, mingled with the odors of cookery, made Mithredath's nostrils twitch.

"Lord Vahauka, I present the *saris* Mithredath, servant of the King of Kings," the majordomo said loudly. Mithredath began to prostrate himself, as he would have before Khshish, but Vahauka, a lean, gray-bearded Persian of about fifty, stopped him with a wave. The satrap turned his head, pre-

senting his cheek to the eunuch.

"My lord is gracious," Mithredath said as he stepped up to Vahauka and let his lips brush the satrap's beard.

"We are both the King of Kings' servants; how can our ranks greatly differ?" Vahauka said. His fellow diners nodded and murmured in agreement. He went on, "Mithredath, I present you to my secretary Rishi-kidin" — a perfumed, sweating Babylonian in linen undertunic, wool overtunic, and short white cloak — "the *ganzabara* Hermippos" — a clean-shaven Hellene who, like the majordomo, wore trousers — "and the general of this satrapy, Tadanmu" — a Persian with a no-nonsense look in his eyes, dressed rather more plainly than suited his station.

Mithredath kissed more cheeks. After the satrap's example, his aides could hardly show the eunuch less favor. The feel of Hermippos' face was strange; only among his own kind was Mithredath used to smooth skin against his lips. Not being the only beardless person present made him feel extraordinarily masculine. He laughed at himself for the conceit.

"Here, sit by me," Vahauka said when the introductions were done. He shouted for his servants to bring Mithredath food and wine. "Refresh yourself; when you have finished, perhaps you will favor us by telling what business of the King of Kings, may Ahuramazda smile upon him and make long his reign, brings you to this far western land."

"With pleasure, my lord," Mithredath said. Then for some time he was busy with food and drink. The wines were excellent; the satrapy of the Yauna of the western mainland was known for its grapes (one of the few things it was known for) even in Babylon. The food pleased Mithredath less. Vahauka might be used to salted olives, but one was enough to last Mithredath a lifetime.

Servants lit torchs as twilight gave way to darkness. Insects fluttered round the lights, whose smoke was sweet with frankincense. Every so often, a nightjar or bat would dive into view, snatch a bug, and vanish again.

The majordomo led in three flute girls wearing only wisps of filmy cloth. Vahauka sent them away, saying, "Our distinguished guest's news will prove more interesting than their songs and dances, which we have all seen and heard before, and surely he will not miss them in any way."

Mithredath glanced at the satrap from under lowered brows. Was that a sly dig at his condition? If so, Vahauka was a fool, which might account for his governing only this undistinguished satrapy. Eunuchs' memories for slights were notoriously long, and Mithredath soon would be far closer to the ear of the King of Kings again than Vahauka could dream of coming.

For the moment, of course, Mithredath remained the soul of courtesy. "As my lord wishes. Know then that I am come at the command of the King of Kings, may Ahuramazda smile upon him and make long his reign, to learn more of the deeds of his splendid forefather the first Khshish, called the Conqueror, that those deeds may be celebrated once again and redound

to the further glory of the present King of Kings, who proudly bears the same name."

A brief silence followed, as the officials thought over what he had said. Vahauka asked, "This is your sole commission, excellent *saris*?"

"It is, my lord."

"Then we will be pleased to render you such assistance as we may be capable of," the satrap said fulsomely. His aides were quick to echo him. Mithredath heard the relief in their voices. He knew why it was there: no misdeed of theirs had come to the notice of the King of Kings.

"You want to learn how the first Khshish took Hellas, eh?" Hermippos said. Mithredath almost failed to recognize the King of Kings' name in his mouth; flavored by his native speech, it came out sounding like *Xerxes*. The *ganzabara* went on, "The ruins of Athens, I suppose, would be the best place for that."

"Aye!" "Indeed!" "Well said!" Vahauka, Rishi-kidin, and Tadanmu all spoke at once. Mithredath smiled, but only to himself. How eager they were to get him out of their hair! Perhaps they, or some of them, *were* up to something about which Khshish should know.

Still, Hermippos had a point. As Mithredath had learned in Babylon preparing for this mission, Athens led the western Yauna in their fight against the Conqueror. The eunuch sighed. Having come so far already, he supposed poking through rubble could not make things much worse.

Hermippos said, "If you like, excellent *saris*, I will provide you with a secretary who reads and writes not only Aramaic but also the Hellenic tongue. It is still often used here and, in the ancient days of which you spoke, would have been the only written language, I suppose."

"I accept with thanks," Mithredath said sincerely, dipping his head. He'd picked up a few words of the tongue of the Hellenes on his westward journey, but it had never occurred to him that he might also need to learn the strange, angular script the locals used. He sighed again, wishing he were home.

Vahauka might have been peering into his thoughts. "Tell us of the news of the court, Mithredath. Here in this distant land we learn of it but slowly and imperfectly."

Nodding, Mithredath gave such gossip as he thought safe to give: he had no intention of setting out all of Khshish's business — or his scandals — before these men he did not know. He was, though, so circumspect that he blundered, for after he was through, Tadanmu observed, "You have said nothing, excellent *saris*, of the King of Kings' cousin, the great lord Kurash."

"I pray your pardon, my lord. I did not mention him because he has been seeing to his estates these past few months, and hence is not currently in attendance upon the King of Kings, may Ahuramazda smile upon him and make long his reign. Lord Kurash is well, though, so far as I know, and I

have heard he has new sons by two of his younger wives."

"And likely hiked up the midwife's skirts after she came away from each of them, to celebrate the news," Tadanmu chuckled; Kurash's prowess and his zeal in exercising it were notorious.

The general asked more of Kurash. Mithredath declined to be drawn out, and Tadanmu subsided. Mithredath made a mental note all the same. Kurash's ambitions, or rather the forestalling of them, were the main reason the eunuch had come to the satrapy of the Yauna of the western mainland. New glory accruing to Khrrish the Conqueror would also reflect onto his namesake, the present occupant — under Ahuramazda — of the throne of the King of Kings.

Mithredath drained his cup, held it out for more. A servant hurried up to fill it. The eunuch sipped, rolled the wine around in his mouth so he could appreciate it fully, nodded in slow pleasure. Here was one reason, anyhow, to approve of this western venture.

He cherished such reasons. He had not found many of them.

"My lord?"

Mithredath looked round to see whom the young Hellene was addressing, then realized with a start that the fellow was talking to him. The ignorance of these provincials! "No lord I," he said. "I am but a *saris* in the service of the King of Kings."

He watched a flush rise under the young man's clear skin. "My apologies, my — excellent *saris*," the Hellene said, correcting himself. "You are called Mithredath, though, are you not?"

"That is my name," the eunuch admitted, adding icily, "You have the advantage of me, I believe."

The fellow's flush grew deeper. "Apologies again. My name is Polydoros; I thought Hermippos would have mentioned me. If it please you, I am to be your guide to the ruins of Athens."

"Ah!" Mithredath studied this Polydoros with fresh interest. But no, his first impression had been accurate: the fellow was well on the brash side of thirty. Wondering if the *ganzabara* was trying to palm some worthless relative off on him, he said cautiously, "I had looked for an older man —"

"To be fluent in Aramaic and the Hellenic tongue both, you mean?" Polydoros said, and Mithredath found himself nodding. The Hellene explained, "It's coming from a banking family that does it, excellent *saris*. Most of the inland towns in this satrapy still cling to the old language for doing business, so naturally I've had to learn to read and write it as well as speak it."

"Ah," Mithredath said again. That made a certain amount of sense. "We'll see how things go, then."

"Very good," Polydoros said. "What are your plans? Will you travel up to the ruins each day, or had you planned actually to stay in Athens?"

"Just how far inland is it?" Mithredath asked.

"A parasang and a half, maybe."

"Close to two hours' walk each way? In the little time I'd have in the ruins, how could I hope to accomplish anything? I'd sooner pitch a tent there and spend a much shorter while in a bit more discomfort. That will let me return to the east all the sooner."

"As you wish, excellent *saris*. After tomorrow, I shall be at your service."

"Why not go tomorrow?" Mithredath asked, rather grumpily. "I can send my servants out at once to buy tent cloth and other necessities."

"Your pardon, sir, but as I said, I am of a banking family. Tomorrow, the monthly silver shipment from the Laurion mines south of here will arrive, and I'll need to be present to help with weighing and assaying the metal. The mines don't produce as they did when the great lode was found not long after Hellas came under Persia, but there will still be close to a talent of silver: forty or fifty pounds of it, certainly."

"Do what you must, of course," Mithredath said, yielding to necessity. "I'll look forward to seeing you morning after next, then." He bowed, indicating that Polydoros could go.

But the Hellene did not depart immediately. Instead, he stood with a far-away expression on his face, looking through Mithredath rather than at him. The eunuch was growing annoyed when at last Polydoros said dreamily, "I wonder how the conquest would have gone, had the Athenians stumbled onto the silver before Khsrish's" — he pronounced it *Xerxes*' too — "campaign. Money buys the sinews of war."

A banker indeed, Mithredath thought scornfully. "Money does not buy bravery," he said.

"No doubt you are right, excellent *saris*," Polydoros said politely. "It was but a fancy of the moment." He bowed. "Till the day after tomorrow." He hurried off.

"I came to the proper decision." Mithredath lifted his soft felt cap from his head, used it to wipe sweat from his face. "I shouldn't care to have to make this journey coming and going every day."

"As you say, excellent *saris*." With broad-brimmed straw hat and thin, short Hellenic mantle, Polydoros was more comfortably dressed than Mithredath, but he was sweating too. Behind them, the eunuch's servants and a donkey bore their burdens in stolid silence. One of the servants led a sheep that kept trying to stop and nibble grass and shrubs.

Something crunched under Mithredath's shoe. He looked down, saw a broken piece of pottery and, close by it, half-buried in weeds, a chunk of brick. "A house stood here once," he said. He heard the surprise in his voice and felt foolish. But knowing this wilderness had been a city was not the same as stumbling over its remains.

Polydoros was more familiar with the site. He pointed. "You can see a fragment of the old wall there among the olive trees."

Had he noticed it, Mithredath would have taken it for a pile of rocks. Now that he looked closely, though, he saw they had been worked to fit together.

"Most of what used to be here, I suppose, has been carried off over the years," Polydoros said. Mithredath nodded. Stealing already worked stone would be easier for a peasant than working it himself. Polydoros pointed again, to the top of one of the hillocks ahead. "More of the wall around the akropolis — the citadel, you would say in Aramaic — is left because it's harder to get the rock down."

"Aye," Mithredath said, pleased to find the Hellene thinking along with him. It was his turn to point. "That is the way up to the — citadel?" At the last moment, he decided against trying to echo the local word Polydoros had used.

The Hellene dipped his head, a gesture Mithredath had learned to equate with a nod. "Of course, it will have been an easier ramp to climb when it was kept clear of brush," Polydoros said dryly.

"So it will." The eunuch's heart was already beating fast; he had endured more exertion on this western journey than ever before in his life. Still, he had a job to do. "Let us go up. If that is the citadel, the ruins there will be important ones, and may tell me what I need to learn of Athens."

"As you say, excellent *saris*."

On reaching the top of the akropolis, Mithredath felt a bit like a conqueror or himself. Not only was the ancient ramp overgrown, it was also gullied. One of the eunuch's servants limped with a twisted ankle; had the donkey stumbled into that hole, it likely would have broken a leg. Mithredath was winded, and even Polydoros, who seemed ready for anything, was breathing hard.

Rank grass and weeds also grew on the flat ground on top of the citadel, between the stones of the wrecked wall, and over the parts of the destroyed buildings the Persians had sacked so long ago. One of the buildings, a large one, had been unfinished when Athens fell. Marble column drums thrust up from the undergrowth. Mithredath could still see scorch marks on them.

In front of those half-columns stood a marble stele whose shape was familiar to the eunuch — there were many like it in Babylon — but which did not belong with the ruins around it. Nor was the inscription carved onto that stele written in the local language, but in Aramaic and in the wedge-shaped characters the Persians had once used and the native Babylonians still sometimes employed.

A thrill ran through Mithredath as he read the Aramaic text: "Khshish, King of Kings, declares: you who may be king hereafter, of lies beware. I, Khshish, King of Kings, having pulled down this city, center of the rebel Yauna, decree that it shall remain wilderness forevermore. You who may be king hereafter and obey these words, may Ahuramazda be your friend and may your seed be made numerous; may Ahuramazda make your days long; may whatever you do be successful. You who may be king hereafter, if you

see this stele and its words and follow them not, may Ahuramazda curse you, and of your seed more may there not be, and may Ahuramazda pull down all you make as I, Khrrish, King of Kings, have pulled down this city, center of the rebel Yauna.'

"A mighty lord, Khrrish the Conqueror, to have his decree obeyed down across the years," Mithredath said, proud to be of the same Persian race as the long-ago King of Kings, though of his own seed, of course, more there would never be.

"Mighty indeed," Polydoros said tonelessly.

Mithredath looked at him sharply, then relaxed. Polydoros was, after all, a Hellene. Expecting him to be overjoyed before an inscription celebrating the defeat of his forefathers was too much to ask.

The eunuch rummaged in one of the packs on the donkey's back until he found a sheet of papyrus, a reed pen, and a bottle of ink. He copied the Aramaic portion of Khrrish's inscription. He presumed the Persian text said the same thing, but could not read it. Perhaps some magus with antiquarian leanings might still be able to; perhaps not. The present Khrrish would only care about the Aramaic. Of that the eunuch was certain.

He looked at what he had written. He frowned, compared the papyrus to the text carved into the stele. He had copied everything written there. Still, something seemed to be missing.

Perhaps Polydoros could supply it; he was a native of these parts. Mithredath turned to him: "Tell me, please, good Polydoros, do you know the name of the king of Athens whom Khrrish the Conqueror overcame?"

The Hellene frowned. "Excellent *saris*, I do not. The last king of Athens whose name I know is Kodros, and he is a man of legend, from long before the time of Xerxes."

"I might have known this was going too smoothly," Mithredath sighed. Then he brightened. "It was to learn such things, after all, that I came here." He scratched his head; he did not approve of loose ends. "But how is it you know of this — Kodros, you said? — and not of the man who must have been Athens' last king?"

"Excellent *saris*," Polydoros said hesitantly, "in the legends of my people, Kodros *is* the last king of Athens."

"Ridiculous," Mithredath snorted. "*Someone* must rule, is it not so? This Athens must have been an enemy worthy of Khrrish's hatred, for him to destroy it utterly and afterward curse it. Such an enemy will have had rulers, and able ones, to oppose the King of Kings. How can it have lacked them for all the time since the death of Kodros? Did no one lead it all those years? I cannot believe that."

"Nor I," Polydoros admitted.

"Very strange." Mithredath glanced over to the unhappy sheep his servants had urged — and dragged — up the overgrown ramp. "Here, before Khrrish's victory stele, seems as good a spot as any to offer up the beast." He

drew the dagger that hung from his belt, cut a spray of leaves from a nearby bush. He put the leaves in his cap. "They should be myrtle, but any will do in a pinch."

Polydoros watched him lead the sheep over to the marble pillar, set the dagger against its neck. "Just like that?" the Hellene asked. "No altar? No ritual fire? No libation? No flute players? No grain sprinkled before you sacrifice?"

"The good god Ahuramazda does not need them to hear my prayer."

Polydoros shrugged. "Our rites are different."

Mithredath cut the sheep's throat. As the beast kicked toward death, he beseeched Ahuramazda to help him succeed in his quest for knowledge with which to glorify the King of Kings. He was forbidden to pray for any more personal or private good, but with this sacrifice had no need to do so in any case.

"Does your god require any of the flesh of you?" Polydoros asked as the eunuch began the gory job of butchering the carcass and setting the disjointed pieces on a heap of soft greenery.

"No, it is mine to do with as I will. A magus should pray over it, but as none is here, we shall have to make do."

"Is that garlic growing over there? It will flavor the meat once it's cooked." Polydoros licked his chops.

Mithredath felt saliva flow into his own mouth. He turned to a servant. "You can get a fire going now, Tishtrya."

"What are you doing?" Polydoros asked the next morning.

"Looking through the notes I made before I left Babylon," Mithredath said. "Here, I knew there was something that would tell me who ruled here when the first Khshriash came. An old tablet says he led Dēmos of Athens into captivity. Who is this Dēmos, if Kodros was the last king here?"

"'Dēmos' isn't a who, I'm afraid, excellent *saris*, but rather a what," Polydoros said. "Whoever wrote your tablet wanted to celebrate the King of Kings, as you do, but did not know the Hellenic tongue well. 'Dēmos of Athens' simply means 'the people of Athens.'"

"Oh." Mithredath sighed. "If you knew the trouble I had finding that —" He shuffled scraps of papyrus, briefly looked happy, then grew cautious again. "I also found something about 'Boulē of Athens.' Someone told me *ē* was the feminine ending in your language, so I took Boulē to be Dēmos' wife. You're going to tell me that's wrong too, though, aren't you?"

Polydoros dipped his head. "I'm sorry, but I must, excellent *saris*. 'Boulē' means 'council.'"

"Oh." The eunuch's sigh was longer this time. "The people of Athens, the council of Athens — where is the king of Athens?" He glared at Polydoros as if the young banker were responsible for making that elusive monarch disappear. Then he sighed once more. "That's what I came here to find

out, I suppose. Where are we most likely to find whatever records or decrees this town kept before it came under the rule of the King of Kings?"

"There are two likely places," Polydoros said after a visible pause for thought that made Mithredath very much approve of him. "One is up here, in the citadel. The other would be down there" — he pointed north and west — "in the agora — the city's marketplace. Anyone who came into the city from the countryside to do business would be able to read them there."

"Sensible," Mithredath said. "We'll cast about here for a while, then, and go down again later. The fewer trips up and down that ramp I take, the happier I shall be." When Polydoros agreed, the eunuch turned to his servants. "Tishtrya, Raga, you will be able to help in this enterprise too. All you need do is look for anything with writing on it, and let me or Polydoros know if you actually found something."

The servants' nods were gloomy; they had looked forward to relaxing while their master worked. Mithredath expected little from them, but did not feel like having them sit idle. He was surprised when, a few minutes later, one of them came trotting through the rubble and undergrowth, waving excitedly to show he had found something.

"What is it, Raga?" the eunuch asked.

"Words, master, carved on an old wall," Raga replied. "Come see!"

"I shall," Mithredath said. He and Polydoros followed the servant back to where his companion was waiting. Tishtrya proudly pointed at the inscription. The eunuch's hopes fell at once; it was too short to be the kind of thing he was seeking. He turned to Polydoros. "What does it say?"

"*Kalos Arkhias*," the Hellene replied: "'Arkhias is beautiful.' It's praise of a pretty boy, excellent *saris*, nothing more; you could see the like chalked or scratched on half the walls in Peiraieus."

"Nasty buggers," Tishtrya muttered under his breath in Persian. Polydoros' eyes went hard for a moment, but he said nothing. Mithredath upbraided his servant; at the same time he made a mental note that the Hellene understood some Persian.

The search resumed. The citadel of Athens was not a large place; a man could easily walk the length of it in a quarter of an hour. But how many such trips would he have to take across it, Mithredath wondered, to make sure he missed nothing? Assuming, of course, he added to himself a moment later, anything was there to be missed.

Polydoros sat down in the narrow shade of an overthrown chunk of masonry, fanned himself with his straw hat. He might have been thinking with Mithredath's mind, for he said, "This could take forever, you know, excellent *saris*."

"Yes," was all Mithredath cared to reply to that obvious truth.

"We need to plan what to do, then, rather than simply wandering about up here," the Hellene went on. Mithredath nodded; Polydoros seemed to have a talent for straightforward thinking. After more consideration, Poly-

doros said, "Let's make a circuit of the wall first. Decrees often go up on the side of a wall so people can see them. Is it not the same in Babylon?"

"It is," Mithredath agreed. He and Polydoros made their way back to the ramp up which they had come.

They walked north and east along the wall. Mithredath's heart beat faster when he saw letters scratched onto a stone, but it was only another graffito extolling a youth's beauty. Then, when they were halfway along the northern reach of the wall, opposite the ruins of some many-columned building, Polydoros suddenly pointed and exclaimed, "There, by Zeus, that's what we're after!"

Mithredath's eyes followed the Hellene's finger. The slab Polydoros had spied was flatter and paler than the surrounding stones. As they hurried toward it, Mithredath saw the slab was covered with letters in the angular script the Hellenes used for their own language. If this was someone praising a pretty boy, he'd been very long-winded.

"What does it say?" the eunuch asked. He fought against excitement; for all he knew, the inscription had been ancient when Khrish took Athens.

"Let me see." Polydoros studied the letters. So, in his more ignorant way, did Mithredth. He could see that the stone-carving here was more regular than the scratchings his servants and he and Polydoros had come upon before. That in itself, he suspected, marked an official document.

"Well?" he asked impatiently. He took out pen and ink and papyrus and got ready to transcribe the words Polydoros was presumably rendering into Aramaic.

"This is part of what you seek, I think," the Hellene said at last.

"Tell me, then!" Had he been a whole man, Mithredth's voice would have cracked; as he was what he was, it merely rose a little.

"I'm about to. Here: 'It seemed good to the council and to the people' . . . *boulê* and *dêmos* again, you see?"

"A plague on the council and people!" Mithredath broke in. "Who in Ahuramazda's name was the king?"

"I'm coming to that, I think. Let me go on: '— with the tribe of Antiokhis presiding, Leostratos serving as chairman, Hypsikhides as secretary —'"

"The king!" Mithredath shouted. "Where is the name of the king?"

"It is not on the stone," Polydoros admitted. He sounded puzzled. Mithredath, for his part, was about ready to grind his teeth. Polydoros continued, "This may be it: 'Aristeides proposed these things concerning the words of the prophetess of Delphi and the Persians:'

"Let the Athenians fortify the citadel with beams of wood as well as stone to meet the Persians, just as was bid by the prophetess. Let the council choose woodsmen and carpenters to do this, and let them be paid from the public treasury. Let all this be done as quickly as possible, Xerxes already having come to Asian Sardis. Let there be good fortune to the people of Athens.'"

"Read it over again," Mithredath said. "Read it slowly so that I can be sure I have your Yauna names correct."

"Not all Hellenes are Ionians," Polydoros said. Mithredath shrugged — how these westerners chose to divide themselves was their business, and he did not care one way or the other. But Khrrish, back in Babylon, would think of them all as Yauna. And so, in his report, Yauna they would be.

Polydoros finished reading. Mithredath's pen stopped its scratching race across the sheet of papyrus. The eunuch read what he had written. He read it again. "Is, ah, Leostratos the ruler of Athens, then? And this Aristеides his minister? Or is Aristеides the king? The measure is his, I gather."

"So it would seem, excellent *saris*," Polydoros said. "But our words for 'king' are *anax* and, more usually, *basileus*. Neither of those is here."

"No," Mithredath said morosely. He mentally damned all the ancient Athenians to Ahriman and the House of the Lie for confusing him so. Khrrish and his courtiers would *not* be pleased if Mithredath had traveled so far, had spent so much gold from the King of Kings' treasury, without finding what he had set out to find. Nothing was more dreadful for a eunuch — for anyone, but for a eunuch especially — than losing the favor of the King of Kings.

Mithredath read the translated inscription once more. "You have rendered this accurately into Aramaic?"

"As best I could, excellent *saris*," Polydoros said stiffly.

"I pray your pardon, good Polydoros," the eunuch said. "I meant no disrespect, I assure you. It's only that there is much here I do not understand."

"Nor I," Polydoros said, but some of the ice was gone from his voice.

Mithredath bowed. "Thank you. Help me, then, if you will, to put together the pieces of this broken pot. What does this phrase mean: 'it seemed good to the council and to the people'? Why does the stone-carver set that down? Why should anyone care what the people think? Theirs is only to obey, after all."

"True, excellent *saris*," Polydoros said. "Your questions are all to the point. The only difficulty" — he spread his hands and smiled wryly — "is that I have no answers to them."

Mithredath sat down on a chunk of limestone that, from its fluted side, might once have been part of a column. Weeds scratched his ankles through the straps of his sandals. A spider ran across his instep and was gone before he could swat it. In the distance, he heard his servants crunching through brush. A hoopoe called its strange, trilling call. Otherwise, silence ruled the dead citadel.

The eunuch rubbed his smooth chin. "How is Peiraeus ruled? Maybe that will tell me something of Athen's ways before the Conqueror came."

"I beg leave to doubt it, excellent *saris*. The city is no different from any other in the Empire. The King of Kings, may Zeus and the other gods smile upon him, appoints the town governor, who is responsible to the satrap. In

the smaller towns, the satrap makes the appointment."

"You're right. That doesn't help." Mithredath read the inscription again. By now he was getting sick of it and put the papyrus back in his lap with a petulant grunt. "'The *people*,'" he repeated. "It almost sounds as if they and the council are sovereign, and these men merely ministers, so to speak."

"I can imagine a council conducting affairs, I suppose," Polydoros said slowly, "though I doubt one could decide matters as well or as fast as a single man. But how could anyone know about what all the people of a city thought on a question? And even if for some reason the people were asked about one matter, surely no one could expect to reckon up what they thought about each of the many concerns a city has every day."

"I was hoping you would give me a different slant on the question. Unfortunately, I think just as you do." Mithredath sighed and heaved himself up off his makeshift seat. "I suppose all we can do now is search further and hope we find more words to help us pierce this mystery."

The eunuch, the Hellene, and the two servants prowled the citadel for the next two days. Tishtrya almost stepped on a viper, but killed it with his stick before it could strike. Mithredath came to admire the broken statuary he kept stumbling over. It was far more restrained than the ebullient, emotional sculpture he was used to, but had a spare elegance of its own.

The searchers came across a good number of inscriptions, but none that helped unravel the riddle the first long one had posed. Most were broken or worn almost to illegibility. Twice Polydoros found the formula, "It seemed good to the council and to the people —" Each time Mithredath swore in frustration, because the rest of the stone was in one case buried beneath masonry it would have taken twenty men to move and in the other missing altogether.

"Enough of this place," Mithredath said on the evening of that second day. "I don't care any longer if the answer is right under my feet — I think it would run away from me like a rabbit from a fox if I dug for it. Tomorrow we will search down below, in the marketplace. Maybe our luck will be better there."

No one argued with him, although they all knew they had not thoroughly explored the citadel — that would be a job for months or years, not days. They rolled themselves in their blankets — no matter how hot the days, nights stayed chilly — and slept.

The marketplace had fewer ruins than the citadel. "How do I know this still *is* part of the marketplace?" Mithredath asked pointedly as he, Polydoros, and the servants picked their way along through grass, bushes, and brush. Before Polydoros could answer, the eunuch added, "Aii!" He had just kicked a large stone, with painful results.

He pushed away the brush that hid it. It was a very large stone; he felt like an idiot for not having seen it. In his anger, he bent down to push the stone

over. "Wait!" Polydoros said. "It has letters on it." He read them and began to laugh.

"What, if I may ask, strikes you funny?" Glacial dignity, Mithredath thought, was preferable to hopping up and down on one foot.

"It says, 'I am the boundary stone of the agora,'" Polydoros told him.

"Oh," the eunuch said, feeling foolish all over again.

The most prominent wrecked building was a couple of minutes' walk north of them; its wrecked facade had eight columns, two of them still standing at their full height and supporting fragments of an architrave. "Shall we examine that first?" Polydoros asked, pointing.

Mithredath's throbbing toes made him contrary. "No, let's save it for last, and wander about for a while. After all, it isn't going anywhere."

"As you wish," Polydoros said politely. Behind them, Mithredath's servants sighed. The eunuch pretended he had not heard.

"What's that?" Mithredath asked a minute or so later, seeing another piece of stone poking up from out of the weeds — seeing it, thankfully, before he had a closer encounter with it.

"By the shape, it's the base a statue once stood on," Polydoros said. He walked over to it. "Two statues," he amended: "I see insets carved for four feet. Ah, there's writing on it here." He pulled weeds aside, read, "'Harmodios and Aristogeiton, those who slew the tyrant Hipparkhos.'"

"What's a tyrant?" Mithredath frowned at the unfamiliar word. "Some sort of legendary monster?"

"No, merely a man who ruled a city but was not of any kingly line. Many towns among the Hellenes used to have them."

"Ah. Thank you." Mithredath thought about that for a moment, then said incredulously, "There was in the marketplace of Athens a statue celebrating men who killed the city's ruler?"

"So it would seem, excellent *saris*," Polydoros said. "Put that way, it is surprising, is it not?"

"It's madness," the eunuch said, shuddering at the idea. "As well for all that Persia conquered you Yauna. Who knows what lunacy you might otherwise have loosed on the world?"

"Hmm," was all Polydoros said to that. The Hellene jerked his chin toward the ruined building, which was now quite close. "Shall we go over to it now?"

But Mithredath reacted to the Hellenic perversity exemplified by the ruined statue base with perversity of his own: "No, we'll go around it, see what else is here." He knew he was being difficult, and reveled in it. What could Polydoros do about it?

Nothing, obviously. "As you wish," the Hellene repeated. He then proceeded to skirt the ruins by an even larger margin than Mithredath would have chosen. Take that, the eunuch thought. Smiling behind Polydoros' back, he followed him north and west.

Still, enough was enough. "I'm certain *this* isn't the marketplace anymore," Mithredath said when the Hellene had led him almost all the way to Athens' overthrown gates.

"No, I suppose not," Polydoros admitted. "Are you ready to head back now?"

"More than ready." Mithredath caught Polydoros' eye. They grinned at each other, both of them a little sheepish. Mithredath glanced at his servants. They did not seem amused and knew better than to seem annoyed.

Something crunched under the eunuch's foot. Curious, he bent down. Then, more curious, he showed Polydoros what he had found. "What's this?"

"An *ostrakon* — a potsherd," Polydoros amended, remembering to put the Yauna word into Aramaic.

"I knew that," Mithredath said impatiently. "I've stepped on enough of them, these past few days. But what's this written on it?"

"Hmm?" Polydoros took a closer look. "A name — Themistokles, son of Neokles."

"Why write on a potsherd?"

"Cheaper than papyrus," Polydoros suggested, shrugging. "People are always breaking pots and always have sherds around."

"Why just a name, then? Why not some message to go with it?"

"Excellent *saris*, I have no idea."

"Hrmp," Mithredath said. He took another step, heard another crunch. He was not especially surprised to find another potsherd under his foot; as Polydoros had said, people were always breaking pots. He was surprised, though, to find he had stepped on two sherds in a row with writing on them. He handed the second piece of broken pottery to Polydoros, pointed at the letters.

"Themistokles, Neokles' son again," the Hellene said.

"That's all?" Mithredath asked. Polydoros dipped his head to show it was. The eunuch gave him a quizzical look. "Good Polydoros, why write just a man's name — just his name, mind you, nothing else — on two different pieces of broken pottery? If one makes no sense, does twice somehow?"

"Not to me, excellent *saris*." Polydoros shifted his feet like a schoolboy caught in some mischief by his master. This time his sandal crunched on something. Mithredath felt a certain sense of inevitability as Polydoros looked at the sherd, found writing on it, and read, "Themistokles, son of Neokles."

The eunuch put hands on hips. "Just how many of these things are there?" He turned to his servants. "Tear out some brush here. My curiosity has the better of me. Let's see how many sherds we can turn up."

The look Raga and Tishtrya exchanged was eloquent. Like any master with good sense, Mithredath pretended not to see it. The servants bent and began uprooting shrubs and weeds. They moved at first with the resigned

slowness servants always use on unwelcome tasks, but even they began to show some interest as sherd followed sherd in quick succession.

"Themistokles, Neokles' son," Polydoros read again and again, and then once, to vary the monotony, "Themistokles of the district Phrearrios." He turned to Mithredath, raised an eyebrow. "I think we may assume this to be the same man referred to by the rest of the sherds."

"Er — yes." Mithredath watched the pile of potsherds grow by Polydoros' feet. He began to feel like a sorcerer whose spell had proven stronger than he expected.

His servants had speculations of their own. "Who d'you suppose this Themis-whatever was?" Tishtrya asked Raga as they worked together to uproot a particularly stubborn plant.

"Probably a he-whore, putting his name about so he'd have plenty of trade," Raga panted. Mithredath, listening, did not dismiss the idea out of hand. It made more sense than anything he'd been able to think of. . . .

"Themistokles, son of Neokles," Polydoros said, almost an hour later. He put down another sherd. "That makes, ah, ninety-two."

"Enough." Mithredath threw his hands in the air. "At this rate we could go on all summer. I think there are more important things to do."

"Like the ruin, for example?" Polydoros asked slyly.

"Well, now that you mention it, yes," Mithredath said with such grace as he could muster. He kicked a foot toward the pile of potsherds. "We'll leave this rubbish here. I see no use for it but to prove how strange the men of Athens were, and it would glorify neither Khrrish the Conqueror nor through him our Khrrish IV, may Ahuramazda make long his reign, to say he overcame a race of madmen."

The eunuch's servants laughed at that: they were Persians too. Polydoros managed a lopsided smile. He was on the quiet side as the four men made their way back to the ruined building in the marketplace.

Once they were there, the Hellene quickly regained his good spirits, for he found he had a chance to gloat. "This building is called the *Stoa Basilios*," he said, pointing to letters carved on an overthrown piece of frieze: "the Royal Portico. If we wanted to learn of kings, we should have come here first."

Chagrin and excitement warred in Mithredath. Excitement won. "Good Polydoros, you were right. Find me here, if you can, a list of the kings of Athens. The last one, surely, will be the man Khrrish overcame." Which will mean, he added to himself, that I can get out of these ruins and this whole backward satrapy.

Seized perhaps by some of that same hope, Raga and Tishtrya searched the ruins with three times the energy they had shown hunting for potsherds. Stones untouched since the Persian sack save by wind, rain, and scurrying mice went crashing over as the servants scoured the area for more bits of writing.

Mithredath found the first new inscription himself, but already had learned not to be overwhelmed by an idle wall-scratching. All the same, he called Polydoros over. "Phrynikhos thinks Aiskhylos is beautiful," the Hellene read dutifully.

"About what I expected, but one never knows," Mithredath nodded, and went on looking. He had been gelded just before puberty; feeling desire was as alien to him as Athens' battered rocky landscape. He knew he would never understand what drove this Phrynikhos to declare his lust for the pretty boy. Lust — other men's lust — was just something he had used to advance himself, back when he was young enough to trade on it. Once in a while, abstractly, he wondered what it was like.

Raga let out a shout that drove all such useless fancies from his mind: "Here's a big flat stone covered with letters!" Everyone came rushing to see. The servant went on, "I saw this wasn't one stone here but two, the white one covering the gray. So I used my staff to lever the white one off — and look!" He was as proud as if he'd done the writing himself.

Mithredath plunged pen into ink, readied papyrus. "What does it say?" he asked Polydoros.

The Hellene plucked nervously at his beard, looked from the inscription to Mithredath and back again. The eunuch's impatient glare finally made him start to talk: "It seemed good to the council and to the people —"

"What!" Mithredath jumped as if a wasp had stung him. "More nonsense about council and people? Where is the list of kings? In Ahuramazda's name, where if not by the Royal Portico?"

"I would not know that, excellent *saris*," Polydoros said stiffly. "If I may, though, I suggest you hear me out as I read. This stone bears on your quest, I assure you."

"Very well." It wasn't very well, but there was nothing Mithredath could do about it. Grouchily, he composed himself to listen.

"'It seemed good to the council and to the people,'" Polydoros resumed, "'with the tribe of Oineis presiding, Phainippos serving as chairman, Aristomenes as secretary, Kleisthenes proposed these things concerning *ostrakismos* —'"

"What in Ahriman's name is *ostrakismos*?" Mithredath asked.

"Something pertaining to *ostraka* — potsherds. I don't know how to put it into Aramaic any more precisely than that, excellent *saris*; I'm sorry. But the words on the stone explain it better than I could in any case, if you'll let me go on."

Mithredath nodded. "Thank you, excellent *saris*," Polydoros said. "Where was I? Oh, yes: '... concerning *ostrakismos*: Each year, when the sixth tribe presides, let the people decide if they wish to hold an *ostrakophoria*.'" Seeing Mithredath roll his eyes, Polydoros explained, "That means a meeting to which potsherds are carried."

"I presume this is leading somewhere," the eunuch said heavily.

"I believe so, yes." Polydoros gave his attention back to the inscribed stone. "'Let the *ostrakophoria* be held if more of the people are counted to favor it than to oppose. If at the *ostrakophoria* more than six thousand potsherds are counted, let him whose name appears on the largest number of *ostraka* leave Athens within ten days for ten years, suffering no loss of property in the interim. May there be good fortune to the people of Athens from this.'"

"Exiled by potsherds?" Mithredath said as his pen scratched across the sheet of papyrus. "Even for Yauna, that strikes me as preposterous." Then he and Polydoros looked first at each other, then back the way they had come. "Raga! Tishtrya! Go gather up the sherds we were looking at. I think we may have a need for them after all." The servants trotted off.

"I also think we may," Polydoros said. "Let me read on: 'Those who have been ordained to leave the city: in the year when Ankises was *arkhon* —'"

"*Arkhon*?" Mithredath asked.

"Some officer or other," Polydoros shrugged. "It means 'leader' or 'ruler,' but if a man only held the post a year, it can hardly have been important, can it?"

"I suppose not. Go on."

"'In the year when Ankises was *arkhon*, Hipparkhos, son of Kharmos; in the year when Telesinos was *arkhon*, Megakles, son of Hippokrates; in the year when Kritias was *arkhon* —'" The Hellene broke off. "No one was exiled that year, it seems. In the next, when Philokrates was *arkhon*, Xanthippos, son of Ariphron was exiled, then no one again, and then" — he paused for effect — "Themistokles, son of Neokles."

"Well, well." Mithredath scribbled furiously, pausing only to shake his head in wonder. "The people really did make these choices, then, without a king to guide them."

"So it would seem, excellent *saris*."

"How strange. Did the *ostrakismos*" — Mithredath stumbled over the Yauna word, but neither Aramaic nor Persian had an equivalent — "fall upon anyone else?"

"Not in the next two years, excellent *saris*," Polydoros said, "but in the year when Hypsikhides was *arkhon*, the Athenian people chose exile for Xerxes, son of Dareios, who can only be the King of Kings, the Conqueror. I would guess that to be a last gesture of defiance; the list of *arkhontes* ends abruptly with Hypsikhides."

"Very likely you are right. So they tried to exile Khrrish, did they? Much good it did them." Mithredath finished writing. The servants were coming back, carrying in a leather sack the sherds that had helped exile a man. Their shadows were long before them; Mithredath saw with surprise that the sun had almost touched the rocky western horizon. He turned to Polydoros. "It would be dark by the time we got back to Peiraieus. Falling into a pothole I never saw holds no appeal. Shall we spend one more night here, and return

with the light of morning?"

The Hellene dipped his head. "That strikes me as a good plan, if you are satisfied you have found what you came to learn."

"I think I have," Mithredath said. Hearing that, Tishtrya and Raga began to make camp close by the ruins of the Royal Protico. Bread and goat cheese and onions, washed down with river water, seemed as fine a feast as any of the elaborate banquets Mithredath had enjoyed in Babylon. Triumph, he thought, was an even better sauce than pickled fish.

His servants dove into their bedrolls as soon as they finished eating; their snores all but drowned out the little night noises that came from beyond the circle of light around the campfire. Mithredath and Polydoros did not go to sleep right away. The eunuch was glad to have company. He felt like talking about the strange way the Athenians had run their affairs, and the Hellene had shown himself bright enough to have ideas of his own.

"No sign of a king anywhere," Mithredath said, still bemused at that. "I wonder if they settled everything they needed to decide on by counting potsherds."

"I would guess they probably must have, excellent *saris*," Polydoros said. "All the inscriptions read, 'It seemed good to the council and to the people.' How would they know that — why would they write that — if they had not counted potsherds to know what seemed good to the people?"

"There you have me, good Polydoros. But what if something that 'seemed good to the people' was in fact bad for them?"

"Then they suffered the consequences, I suppose. They certainly did when they decided to oppose Xerxes." Polydoros waved at the dark ruins all around.

"But they were the leading Yauna power at the time, were they not? They must have been, or Khrrish would not have obliterated their city as a lesson to the others. Until they chose to fight him, they must have done well."

"A king can also make an error," Polydoros said.

"Oh, indeed." Being a courtier, Mithredath knew better than the Hellene how gruesomely true that could be. "But," he pointed out, "a king knows the problems that face his land. And if by some mischance he should not, why then he has his ministers to point them out to him so that he may decide what needs to be done. How could the people — farmers, most of them, and cobblers and potters and dryers — how could they even have hoped to learn the issues that affected Athens, let alone what to do about them?"

"There you have me," Polydoros confessed. "They would be too busy, I'd think, working just to stay alive to be able to act, as you say, more or less as ministers in their own behalf."

Mithredath nodded. "Exactly. The king decides, the ministers and courtiers advise, and the people obey. So it is, so it has always been, so it always will be."

"No doubt you are right." An enormous yawn blurred Polydoros' words.

"Your pardon, excellent *saris*. I think I will imitate your servants." He unrolled his blanket, wrapped it around himself. "Will you join us?"

"Soon."

Polydoros did not snore, but before long was breathing with the slow regularity of sleep. Mithredath remained some time awake. Every so often his eyes went to the bag of potsherds, which lay close by Raga's head. He kept trying to imagine what being an Athenian before Khrrish the Conqueror came had been like. If the farmers and potters and such ruled themselves by counting sherds, would they have made an effort to learn about all the things Athens was doing so they could make sensible choices when the time came to put the sherds in a basket for counting, or whatever it was they did? What would it have been like, to be a tavern-keeper, say, with the same concerns as a great noble?

The eunuch tried to imagine it, and felt himself failing. It was as alien to him as lust. He knew whole men felt that, even if he could not. He supposed the Athenians might have had this other sense, but he was sure he did not.

He gave it up, and rolled himself in his blanket to get some rest. As he grew drowsy, his mind began to roam. He had a sudden mental picture of the whole vast Persian Empire being run by people writing on potsherds. He had visions of armies of clerks trying to transport and count them, and of mountains of broken pottery climbing to the sky. He fell asleep laughing at his own silliness.

Third-rate town though it was, Peiraeus looked good to Mithredath after some days pawing through the ruins of dead Athens. He paid Polydoros five gold darics for his help there. The Hellene bowed low. "You are most generous, excellent *saris*."

Mithredath presented his cheek for a kiss, then said, "Your assistance has but earned its fitting reward, good Polydoros."

"If you will excuse me, then, I'm off to see how much work has fallen on my table while I was away." At Mithredath's nod, Polydoros bowed again and trotted away. He turned back once to wave, then quickly vanished among the people crowding the port's streets.

"And now we are off to the satrap's residence," the eunuch told his servants. "I shall inform Vahauka of the success of my mission, and draw from the *ganzabara* —" Mithredath snapped his fingers. "What was the fellow's name?"

"Hermippos, wasn't it, sir?" Tishtrya said.

"Yes; thank you. I shall draw from Hermippos the funds we need for our return journey to Babylon. After giving Polydoros his due, we are for the moment poor, but only for the moment."

"Yes, sir. I like the sound of going home fine, sir," Tishtrya said. Raga nodded.

"I wouldn't be sorry never to see this satrapy again myself," Mithredath

admitted, smiling.

The satrap's residence was busier in the early morning than it had been at nightfall. A couple of guards stood outside the entrance to make sure the line of people waiting to see Vahauka and his officials stayed orderly.

Mithredath recognized one of the guards as the man who had been at the door the evening he'd arrived. He went up to the fellow. "Be so good as to convey me to his excellency the satrap," he said. "I don't care to waste an hour of my time standing here."

The guard made no move to do as Mithredath had asked. Instead, he looked down his long, straight nose at the eunuch and said, "You can just wait your turn like anybody else."

Mithredath stated. "Why, you insolent —" He started to push past, but the guard swung up his spear. "What do you think you're playing at?" the eunuch said angrily.

"I told you, no-stones — wait your turn." The spearhead pointed straight at Mithredath's belly. It did not waver. The guard looked as though he would enjoy thrusting it home.

Mithredath glanced at his servants. Like any travelers with a shekel's weight of sense, he, Tishtrya, and Raga all carried long daggers as protection against robbers. Neither servant, though, seemed eager to take on a spear-carrying soldier, especially when the men served the local satrap. Seething, Mithredath took his place in line. "I shall remember your face," he promised the guard.

"And I'll forget yours." The lout laughed loudly at his own wit.

The line crawled ahead, but Mithredath was too furious to become bored. The revenges he invented grew more and more chilling as he got hotter and hotter. A soldier who thwarted one of the royal eunuchs — even a soldier so far from Babylon as this guard — was asking to have his corpse given to ravens and kites.

The eunuch had thought Vahauka would signal him forward as soon as he saw him, but the satrap went right on with his business. At last Mithredath stood before him. Mithredath started to prostrate himself, waited for Vahauka to stop him and offer his cheek. Vahauka did not. Feeling his stomach knot within him, the eunuch finished the prostration.

When he rose, he had his face under control. "My lord," he said, and gestured toward the bag of potsherds Raga held, "I am pleased to report my success in the mission personally set me by Khrish, King of Kings" — he stressed the ruler's name and title — "may Ahuramazda make long his reign."

Vahauka yawned. Of all the responses Mithredath might have expected, that was the last.

Having to work now to keep his voice from stumbling, the eunuch went on, "As I have succeeded, I plan to draw funds from the *ganzabara* Hermippos for my return voyage to Babylon."

"No." Vahauka yawned again.

"My lord, must I remind you of my closeness to the King of Kings?" Only alarm made Mithredath's threat come out so baldly.

"No-balls, I doubt very much if you ever have been — or ever will be — close to Kurash, King of Kings, may Ahuramazda smile upon him and make long his reign."

"Ku—" The rest of the name could not get through the lump of ice that suddenly filled Mithredath's throat.

"Aye, Kurash. A ship came in with the word he'd overthrown and slain your worthless Khrrish the day you left for the old ruined inland town. Good riddance, says I — now we have a real King of Kings again, and now I don't have to toady to a half-man anymore, either. And I won't. Get out of my sight, wretch, and thank the good god I don't stripe your back to send you on your way."

The satrap's mocking laughter pursued Mithredath as he left the hall. His servants followed, as stunned as he.

Even the vestiges of dignity deserted him as soon as he was out of sight of the satrap's residence. He sat down heavily, buried his face in his hands so he did not have to see the passersby staring at him.

Tishtrya and Raga were muttering back and forth. "Poor," he heard one of them say. "He can't pay us anymore."

"Well, to Ahriman with him, then. What else is he good for?" the other replied. It was Raga. He dropped the leather sack. The potsherds inside clinked. The sack came open. Some sherds spilled out.

Mithredath did not look up. He did not look up at the sound of his servants — no, his ex-servants, he thought dully — walking away, either.

They were some time gone when at last the eunuch began to emerge from his shock and despair. He picked up a sherd. Because one man had died, his own life, abruptly, was as shattered as the pot from which the broken piece had come, as shattered as long-ago Athens.

He climbed slowly to his feet. Perhaps he could beg one of his darics back from Polydoros. It would feed and lodge him for a couple of weeks. Then he could — what? At the moment, he had no idea. For that matter, he did not even know if the Hellene would give him the gold.

One thing at a time, he thought. He stopped a man and asked the way to the bankers' street. The man told him. Nodding his thanks, he tossed the potsherd on the leather sack and started off. ●

1989 Clarion Announces Writers' Workshop

The 22nd Clarion Workshop in science-fiction and fantasy writing will be held from 25 June to 5 August 1989 at Michigan State University.

Writers-in-residence will be Tom Disch, Karen Joy Fowler, Octavia Butler, Spider Robinson, Kate Wilhelm, and Damon Knight.

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Michael H. Cook, Publisher

GRIMERICK

'Twas many a long year ago
when animal-osity started to grow:
 one amoeba in the yeast
 on his brothers did feast,
and claimed he just kneaded the dough.

Through the swamp an old brontosaur treks
and his hindquarters fiercely protects;
 he sharpens his claws
 with great care just because
he knows how that tyrannosaur wrecks.

A shaggy and monkey-like shape
crept down to the edge of a lake,
 took a rock to the head
 of a buddy named Fred
and then, you might say, he went ape.

Fire was invented, they say,
so that men who belong to tribe "A"
 at dinner could see
 that the men of tribe "B"
were offered a toast the right way.

New centuries brought new attacks,
new weapons for getting in whacks —
 a club made of bone,
 an unsharpened stone —
you may wonder, "What next?" but don't ax.

A knight of Cathay took a vow
to build a new weapon somehow;
 with a branch and some twine
 and a sharp stick of pine,
shaped an arrow and then took his bow.

In wars fought for loot or the Lord
men were pierced by the arrow or sword,
 'til some mother's son
 invented the gun
'cause he thought that we might all be bored.

The East and the West went all out;
they had slogans and threats to call out;
 like two little boys
 with their nuclear toys,
they just couldn't help but fall out.

In the space between Venus and Mars,
whirled a planet devoted to wars,
 where the East and the West
 tried to prove who was best,
and elevated themselves to the stars.

Millennia passed as they must
while settled the nuclear dust.
 The mutants tried hard
 to rebuild all the shards,
but finally said, "Let it rust!"

— Jim Flechtner

***Amazing Stories* congratulates
its 1988 Chesley Bonestell Award winners:**

Janet Aulisio for Best Magazine Interior Illustration
("A Bomb in the Head," May 1987)

Terry Lee for Best Magazine Cover Illustration
("The Iron Star," January 1988)

RESTRICTED TO THE NECESSARY

by John Barnes

art: Nicola Cuti

FROM: Captain Rwanda Goodall, TNS *Boaz*

TO: Admiral Taildancer, Western Spiral Arm Command

SUBJECT: Routine copy of onship misdemeanor court martial — 3rd Lt. Pyotr Nakasone, TN. Confession transcript w/ decision attached. Cf. documents pertaining to Eric Pastiglio case, transmitted previously.

ACTION REQUESTED: Routine approval.

DATE: 5/4/3496

They tell me that this is pretty much routine; in fact the skipper said if it was up to her, she'd just let it go, but it's there in the camera record, so they have to either investigate me or have me confess. If I confess, the worst I can get is five jolts. Maybe I'll get less, maybe just a reprimand. I'm hoping.

That doesn't sound real professional, but they said if I just let it all dump out, then Doc Sealeater can evaluate it easier, and of course I am a little bit worked up — it's pretty upsetting to get your permanent commission at ten hundred and be up on a charge at fourteen hundred. Anyway, if I can get this done by fifteen hundred, Captain Goodall says we can get the sentence carried out before dinner, so at least it will all be over.

I *am* pretty upset. I've known Eric — I guess that's I *had known* Eric, but it's still hard to think of him being gone — like I say, I'd known him for a long time. We roomed together in the primates' dorm at the Academy for all four years, and senior year we took a first medal in human doubles tennis. We'd been through all the usual stuff together, I guess, and crammed for every test together, and in a lot of ways we were like brothers.

That was good for Eric because he didn't have much of a gift for making friends. Eric was a nice guy, but shy, so he just hung around me most of the time, and then after a while people would get to know him. [TRANSCRIPT EDIT INSERT FROM EXAMINER: Note that Eric Pastiglio {Manifest #22, Pro. Com. 4/5/3496, deceased 5/2/3496} according to Academy record showed distinct preferences for primate company, but that introductions by Pyotr Nakasone {Manifest #20, Pro. Com. 4/5/3496, Per. Com. 5/2/3496} show no such pattern. In conformance with hypothesis of no contagion of Anti-Doctrinal ideas. Signature Cmdr. Sealeater, MD, TN. END INSERT; RESUME TRANSCRIPT EDIT] One thing I will say — he never talked about his home world much. I knew Scyros had only been under the Doctrine for about 150 years, but I never saw anything in Eric's behavior to suggest anything wrong.

At least not till today. God, that's a morbid thing to say about a friend. [TRANSCRIPT EDIT INSERT FROM EXAMINER: Actually part of a normal



shock/grief response. Self-evaluation is excessively harsh, but not pathologically so. Signature Cmdr. Sealeater, MD, TN. END INSERT; RESUME TRANSCRIPT EDIT]

So, anyway, we survived the last semester of Jaynesian psychomechanics together too — for once I was the good student and he had trouble — and just when we thought it was good-bye for ten years or so, berths got reshuffled and we both ended up on the *Boaz* for our first mission. I'm sure it was a relief to Eric to have a friend aboard, but it was a relief to me too, and besides, I had worried a little about Eric's being able to make friends with me not around. Even with me there, he seemed uncomfortable around Thickmane, the other provisional commission on board, and that was strange because Thickmane is a great guy. But I put it down to the quirky moodiness that came over Eric a lot.

All three of us provisional commissions had been working since we lifted, of course, on our final xenoethnographic problem. Hardly anyone ever flunks the FXEP if he works at all, but the problem itself was so challenging that "anyone with a modicum of intellectual curiosity would feel compelled to work his tail off on it," as Thickmane put it. "Of course, you guys seem to have done that already."

I set a bowl of standard chow down for him, then got one for myself and sat down with it in my lap. "I must have misplaced mine," I said. "They made us check them at the door in the primates' dorm. Makes it easier to sit down."

Thickmane grinned at us and ate. Eric was quiet as always, so I asked, "How's yours going?"

He shrugged. "I thought I had a good answer before and just had to write it up. I kind of got hit with an idea for a completely different answer, one I'd rather use, so I want to work on that."

"That'll be tough," Thickmane said, licking his chops. "You want to talk about it, Eric? We're allowed to compare notes, you know, as long as what we give is basically our own answer."

He shook his head. "It's a really strange idea, and I think I need to work on it awhile to really understand it myself. Like I said, I already have an answer, and if this doesn't pan out by twenty-one hundred, I'll just write up what I have. Thanks for the offer, though, Thickmane. I might call you in later."

"Feel free. How's it going with you, Pyotr?"

I shrugged. "Think I've got it. If you wouldn't mind taking a look —"

"Sure. In exchange for a good brushing." He scratched his ear with his back paw.

"Happy to," I said. "Sure you don't want to compare notes, Eric?"

"Not just yet. See you guys." He went to his cabin; Thickmane and I went to mine.

Thickmane, of course, had his answer in perfect order. He was third in XE in our class, anyway. "But yours is really good, Pyotr. Best thing I've

ever seen you do — this'll pass with no trouble at all. Now, if you don't mind using that opposable thumb of yours —"

I picked up the brush. "You've got it. Head, back, or belly first?"

"Start with the head." He winked and wagged his tail significantly. "If we finish up with the belly, maybe something will happen. If you'll help me slip off this voder —"

I unsnapped it and pulled the harness off over his head. Without the voder, of course, he wouldn't be able to speak, but it was pretty clear we wouldn't be talking much, and the things *are* awkward up close.

I ruffled his ears a little, just to flirt, and started to brush out his shaggy mane. I've always been a little partial to wolves anyway, and Thickmane is the most beautiful wolf I've ever seen. As I ran the brush along his back, I nuzzled his face; he turned and licked my nipples, his hot, strong breath blowing in my face.

That was all I could stand. I set the brush down and turned around to bring my face between the big, shaggy legs. The big wolf lay down beside me, the soft fur on his snout brushing my thigh, and then we were lost in making love. It was incredible — I'm not sure that belongs in a Navy report, but it was, and the doc did say everything. As I've said, I like wolves anyway, and Thickmane is a terrific lover.

I asked Captain Goodall if she thought my feelings about wolves were weird before I started this confession. She said that's just in the range of normal preference — in fact she said she'd always had a big thing for dolphins, which is awkward because few of them like gorillas, supposedly because the body hair gets soggy, wet, and cold. After that business with Eric, I guess we'll all be feeling weird for a while. It feels kind of creepy to think of him up there all alone in his cabin, working on *that*, while we were rolling on the mat.

The main reason I mentioned that, though, is that Thickmane's been feeling guilty, and I want to get it on the record that I don't think there was anything we could have done. Eric stayed in his cabin with the door curtain pulled the whole time. Even if Thickmane and I had been around, chances are Eric wouldn't have talked to us about it. I think Thickmane's problem is that he feels responsible for everything.

Of course, part of the reason he's so much fun on a mat is that he's so dominant . . . but I suppose that doesn't belong in a record of this kind, either. [TRANSCRIPT EDIT INSERT FROM EXAMINER: Note significance: attribution of pattern of behavior is to individual personality. Tends to confirm no transference from Eric Pastiglio {Manifest #22, Pro. Com. 4/5/3496, deceased 5/2/3496}. Signature Cmdr. Sealeater, MD, TN. END INSERT; RESUME TRANSCRIPT EDIT]

I do remember that we talked about him for a while, lying there in the afterglow. "I don't know, just kind of an odd talent," I said. "He's great at deducible math. A thousand years ago, when living organisms were still doing physics, he'd have been top of the class."

"If he's so good at math, why did he have such a bad time in Jaynesian psychomechanics?" Thickmane asked. He rolled over closer; I scratched his mane affectionately.

"Well," I said, feeling a little disloyal, "he isn't really very good at math. He's good at deducible — if you can get an answer by doing it step by step, Eric will get it. But Jaynesian is all adeducible — no pathway to the answer, by definition, right? And he doesn't seem to have any intuition. He does all the routines — memorizes the relations, visualizes, meditates — and still nothing pops, and if it does, it's wrong. Certainly, he doesn't have your gift."

"Lucky guesses."

"Once is luck. Two hundred times back to back is talent." I pressed the tip of his ear between my lips.

"Mmm. Scratch behind that one, will you? Yeah. I suppose I do have a gift that way. You're not such a slouch yourself." He wiggled against me, that warm wolf-smell strong on my face, the soft hair of his underside brushing my thighs and belly.

I thought of starting something, but it was close to dinner. "Well," I admitted, "I guess so. Part of his problem, though, isn't really the math at all. He just doesn't find any of the stuff obvious. He even had trouble with Krendl's Theorem. And that should be obvious as soon as you look around and notice that none of the intelligent species averages any smarter than any other."

"Wasn't he from —"

If it had been anyone but Thickmane, I'd have snapped at them out of habit. I was used to defending Eric — it certainly wasn't his fault where he was from. But somehow the question wasn't so personal this time. "Yeah. He's from Scyros. One of the last Anti-Doctrinal worlds to fall. But his family's been Inner Doctrine for a century."

Thickmane shrugged. "I didn't mean he'd picked anything up. I just meant he hadn't seen many intelligent beings other than humans before he came to the Academy — Scyros is what, ninety-eight per cent human? You or I have always met plenty of minds like our own wearing different bodies, so for us Jaynesian stuff is obvious. If a brain is big and complex enough for a mind to run in it, we expect a mind to be there. Eric knows that, but he hasn't experienced it to the extent we have."

Looking back now — that was only about twenty-four hours — I can't believe how close we were to the truth. I guess Thickmane isn't the only one who feels bad, at that.

Anyway, Thickmane and I started talking about other things, and then we went down to dinner. We were planning to ask Eric sometime — it seemed interesting to have grown up around just one sapient species — but not especially soon. Like I said, we had no idea. [TRANSCRIPT EDIT INSERT FROM EXAMINER: Note again that causality is attributed to environment. Tends to confirm no contagion from Eric Pastiglio {Manifest #22, Pro. Com. 4/5/

3496, deceased 5/2/3496}. Signature Cmdr. Sealeater, MD, TN. END INSERT; RESUME TRANSCRIPT EDIT]

Eric didn't even eat supper in procos' mess; he just popped in, grabbed a field ration, and turned to go. He looked kind of haunted, and we asked, but he shrugged and smiled. "I still don't know. I'm thinking of taking a stim-tab and just staying up all night."

Thickmane shook his furry head. "Not a good idea — you lose mental efficiency —"

"Not that much. First forty-eight hours you're still at ninety-five per cent. That should be good enough. And I need those hours."

Did riding a stim all the way to the next morning put him over the edge? I guess Thickmane and I will always wonder if we should have argued harder. But we wished him luck, and that was the last we saw of him till the next morning.

In practice, the FXEP is an oral; after all the calculations and notes and graphs, they give you three minutes to get your basic idea across, and then refer to your written work only if there's some question. It had to be given, of course, in the ship's commons because that was the only place everyone could meet — we have an officer corps of one gorilla, two oranges, a dolphin, two orcas, and an elephant.

As we lined up to go in, Eric grinned at us. "I think it paid off," he said. "I have a really different solution, but one that's *so* elegant. . . ."

"That's good," I said.

"It should be interesting," Thickmane added.

Eric didn't say anything; I guess it was clear we didn't want to hear what we'd be hearing soon enough.

We sat and stared at the wall for a while; I was getting more and more wound up. They give you the permanent commission the moment you pass, so chances were that within the hour we'd all be celebrating, but meanwhile it was nerve-wracking.

After a long time, the door opened and Chief Engineer Kipling poked his head out the door, his snout fiddling with his voder as it always is. I think he's just never happy with his voice. "Follow me, please," he said.

Eric flashed a quick thumbs-up, Thickmane wagged his tail, and we followed Kipling through the door. For a moment I wondered how dolphins and orcas handled this, then I realized they probably just waited at the mouth of the swimming tube that leads into the commons.

He led us to the front of the room, where we could face the entire gathering, including the doc, the pilot, and the second engineer in the tank. "As chief scientist, I will state the problem," Klarman said, hooking his legs over the table and stroking his orange beard. He picked up a card and read:

"The hypothetical world for the FXEP has two sapient species, both already past the Jaynesian transformation. Species **A** herds Species **B** for

meat. The **Bs** are also used as tutors for the **As**' children. There is no record of any act of violence against the **As** by the **Bs**, even in cases where, for example, a long-time family tutor is slaughtered for the table on the whim of a child, or where **Bs** are ordered to slaughter their own children or parents.

"You were asked to identify a specific step you would take toward rendering the data intelligible."

Captain Goodall rose, resting on her knuckles, and said, "By tradition, we proceed in order of Academy class standing, so we'll begin with Provisional Commission Thickmane. What is a specific step you would take to make the data intelligible?"

Thickmane sat up straight and proud; I had done a good job of brushing him that morning. "I would tend to doubt the given data. There's a good chance that some kind of rebellion, probably symbolic, actually *does* happen frequently and is being punished by killing and eating the rebels — but it's not apparent to outsiders. So I'd start by interviewing **As** who had owned two different groups of **Bs** — one group that had been slaughtered and one group that had died of natural causes. Differences in testimony might well tell me what behavior by the **Bs** constituted a hidden rebellion."

There was a general murmur of voders in the room. Klarman nodded. "That's genuinely excellent. You've passed the exam."

Captain Goodall came forward. "Stand to attention." She drew a third lieutenant's badge on a clip from her pocket belt, removed the proco's badge from Thickmane's collar, and hung the new badge in its place. "Welcome to the permanent crew, as second scientist. As juniormost member so far today, take your seat there." She pointed.

Thickmane got up and padded over to the spot; I noticed they had already put a rug down there, and that there were two empty chairs next to it.

There was a brief burst of applause from the officers; Captain Goodall nodded, and they were quiet. "Provisional Commission Pyotr Nakasone, please state your answer."

I swallowed hard. I knew abstractly that there were always many thousands of possible answers to a xenoethnographic problem, but Thickmane's had been so well received that I felt intimidated. "Well," I began, "I would suggest examining the religious texts and legends of the **Bs** and comparing them with the traditional recipes of the **As**, to see if similar rituals are prescribed. One working hypothesis is that the **Bs** are able to rationalize the situation by regarding the **As** as divine. This seems particularly likely because of some information in the supplementary packet: the main **B** civilization was destroyed four centuries ago by technologically superior **As** in a surprise attack. There is some analogy to the American human civilizations under the Iberian conquest. I think it possible that the **Bs** have been trained to regard being cooked as a high honor."

Everyone, including Thickmane, nodded. It was very quiet. Then Lieutenant Sunsplash, the pilot, slapped her tail hard on the surface, and every-

one applauded. "Good job," the skipper said. She came forward quickly. "Stand to attention. Welcome to the permanent crew, as third pilot." She reached out and unclipped the proco insignia from my shirt, and attached the new third lieutenant's insignia. Everyone applauded again.

"Have a seat," she said, pointing to the chair next to Thickmane. I went and sat next to him, and now only Eric was left up in front.

There was something strange about the way Eric leaned forward — a bit too eagerly. Captain Goodall didn't seem to notice, though; she simply said, "Provisional Commission Eric Pastiglio, please state your answer."

"I also found my answer in the supplementary information," Eric said. "I think there's a genetic determination involved. The A species is descended from solitary predators — similar to terrestrial big cats or tyrannosaurs. The Bs are descended from herbivores, herd animals, kind of like kangaroos. A lot of herbivore species have a definite pecking order, a 'bull of the herd' system. I think that quite possibly the Bs have a genetic predisposition for being dominated."

There was a shocked silence. My head was buzzing and I wanted to vomit. Even through the voder, the skipper's voice was strangled and ill. "Did you even hear such an idea before?"

"No, I — it came to me. If you consider the evidence —"

Captain Goodall's voder whistled arrest-at-once; we all grabbed Eric. His confident smile collapsed; he was limp. "What did I do?"

The captain started to answer but couldn't find any words. Over the speakers, Doc Sealeater began, "The pattern of thought — shows certain tendencies —" and faded out.

Klarman took a deep breath. "You may as well hear this, since your classmates will, anyway. It has taken us a thousand years since the Age of Awakening to establish the Inner Doctrine. And yet you contradicted its First Principle: The nature of a sapient's consciousness is determined only by itself. In other words, you were given that the species were both sapient; their physical attributes should have been of no interest to you. There are at least fifty possible solutions, like those of your classmates, that would deal only with relations, messages, beliefs, training — and you came to none of those. If you can arrive at the conclusion you did, then your education is a complete failure because the one thing that we know for sure is that the shape of the body has nothing — *nothing!* — to do with the mind that it houses."

Eric was well-trained; I'll give him that. He bowed his head in quiet submission and said, "I understand. I flunked. But why am I under arrest?"

Klarman looked as sick as I felt, but he gritted his teeth and explained, quoting the Book of the Great Peace. "'The moment that the shape of the body is presumed to determine the character of the soul, you have begun the irreversible fall into speciesism; therefore, brothers, never presume to know the individual in the absence of individual data.' " He gestured at the triangle on the wall. "They were the victims of your kind of thinking. Not one of

them was ever awakened before the last one was gone; what they might have told us of the world around us died with them."

Eric stared up at the equilateral triangle, into the eyes of the blue whale, the pygmy gorilla, and the Siberian tiger. Tears gushed from his eyes.

As we started to move him, he stiffened and fought, but of course the skipper and the two orangs were much too strong for him. The rest of us were only needed to keep him from getting a handhold or grabbing something he could use as a weapon.

We dragged him down the corridor as he punched out at us, sobbing and moaning; I hope I never hear that sound again in my worst nightmare. I think it wasn't until the last moment that he knew what was happening to him. Certainly, Thickmane and I were just helping the crew; we'd heard rumors in the Academy, of course, but I don't think any of us remembered them just then. I hope Eric didn't, anyway.

When we got to the airlock, he grabbed the inside doorframe, down low, and held on. Without thinking much, I kicked his hand two — no, three, definitely three — times, finally grinding the hard little lumps of his fingers under my heel until he let go. [TRANSCRIPT EDIT INSERT FROM EXAMINER: Camera record shows that Nakasone kicked three times but hit the fingers only twice. Note the basic concern for truth even when dealing with recent high-stress memory, indicative that there has been no permanent injury. Signature Cmdr. Sealeater, MD, TN. END INSERT; RESUME TRANSCRIPT EDIT] They dragged him in, throwing him against the back wall; the captain drew her knife and covered him as the rest of us got out of the airlock. Then she backed out and threw the door-close lever.

That ought to complete my confession, which is supposed to be for maltreatment of a prisoner. I guess this is beside the point. But I feel like I should include it for some reason, and Doc Sealeater seems to think so too: just before the door slammed shut, Eric started yelling something about being the original — I didn't get the original what — and then screamed, "*Animals! Animals! Animals!*"

Just like that. Three times. I don't know what he meant: the orcas, wolves, and dolphins on board eat dry food like the rest of us — on a little exploration ship like this, there's no room for livestock or pets — so there weren't any animals on board. But then, considering how sick poor Eric was, I suppose that it didn't really mean anything.

I could still hear him screaming and pounding on the door for a second, but then Lieutenant Sunsplash dropped the ship out of hyper. We were suddenly weightless as we reentered normal space. Captain Goodall cycled the airlock; the exterior valves opened into space with a heavy, thudding sound. She hit the eject button, and we heard the unloader trip. Something bumped against the exterior door.

The exterior door slid closed, the air hissed back in, and it was quiet. The warning bell rang, and then weight came back as we returned to hyper.

I feel terrible. Sure, he was absolutely Anti-Doctrinal, and we had to get rid of him, but there was no excuse for kicking and stamping on his hand. We'd have gotten him out the door eventually without that. Dangerous as he potentially was, none of that was his fault. He had been raised on a planet full of weird ideas, and somehow one of them soaked in too deep to be washed out again. We only needed to get rid of him — not to hurt him.

That's a thought. When he screamed "Animals!" he probably meant me.
[FILE WITH: 1. Verdict (misdemeanor guilty). 2. Record of Reprimand.
CLOSE FILE. AUTHORIZATION FOR ACTION: Cptn. Rwanda Goodall, TNS
Boaz.]

John Barnes is a graduate student at the University of Montana, where he hopes to graduate with a master's degree in both writing and drama. In addition to his fiction writing, John supports himself by doing some technical writing, software consulting, and by sponging off his wife, a Ph.D. candidate in microbiology.

The author's short stories have appeared in CoEvolution Quarterly, Amazing® Stories, Analog, The Magazine of Fantasy & Science Fiction, and Isaac Asimov's Science Fiction Magazine. His first novel, The Man Who Pulled down the Sky, was published in the spring of 1988.

ROBOCOP MEETS BLADE RUNNER'S DAUGHTER IN DAMNATION ALLEY

When I go out to see a show —
The futuristic kind —
I know what kind of scenery
And world I'm gonna find.
The sky is dark with smog and
clouds
Of gray, unhealthy shades;
Unhampered hoodlums rule the
streets
With chain-saw laser blades.
Computers rule our every move
(Profound ones and profane);

Of course by then, most folks
won't care:
We'll all think with one brain.
We'll bomb each other just for fun
In mini World War Threes
Until some gloomy holocaust,
Each movie script agrees.
So I have built a time machine
To halt time's constant flow,
For I have seen the future and
I do not care to go.

— Dan Crawford



A CHOICE OF WINES
by Susan Shwartz
art: George Barr



Susan Schwartz is a former medievalist and faculty member who now works on Wall Street as an editor. Her novel, Byzantium's Crown, was published by Warner; a second novel in the "Byzantium's Heirs" series, entitled The Woman of Flowers, will soon be released. Her short fiction has appeared in Analog, Amazing® Stories, Fantasy Book, and The Village Voice, as well as in anthologies such as Invitations to Camelot, Magic in Ithkar, Greyhaven, and Werewolves.

The story before you, "A Choice of Wines," is a sequel to an earlier short story, "Temple to a Minor Goddess" (January 1987).

Sitting in the university's library while student protesters marched in the quadrangle was somewhat like standing on the walls of Troy, watching the strong-greaved Achaeans strut, flourish their weapons, and taunt the weak-minded into coming down and fighting. Each time student leaders passed around the bullhorn and the wine, the undergraduates clustering around them grew louder and more abusive.

A ribald yell went up. Barres crumpled a sheet of paper and started the page afresh. He didn't need to see what was going on to know that, in leaving the library, someone had had to cross the picket line that students had thrown up during their most recent boycott. Judging from the glee in the shouting, probably some senior faculty member.

He himself had hated to cross that picket line; his father had been a union member till the day he retired to Florida. But his father had worked hard all his life. Just like Barres had studied hard. And now these kids were calling his whole life's work into question. Not that he was doing all that well in his self-chosen life's work, a translation of the *Aeneid*.

What was this new chant? "One — two — three — four —! No elitists anymore!"

A woman had control of the bullhorn now and, in a voice more suited to opera than to guerrilla theater, condemned the new distribution requirements. Barres laid his pen down and listened. As a biochemist, she was intellectually and morally outraged at having to study — no, that wasn't right; she was a graduate student, and therefore exempt from the requirements — dead languages and moribund history suitable only for cocktail-party talk in the overdecorated homes of the overly rich.

She'd be calling Latin and Greek "irrelevant" next, Barres thought. *Must be nice to have the time to picket a library, rather than catalogue in it for minimum wages, or do someone else's research, just to get money to go on.* He'd never had the luxury of time off for protesting. But then, he was a classicist and, by the protesters' definition, useless. What would he know?

Well, Barres, can you answer that? Damn, that was a stupid way to translate line 103! He wadded up the paper and threw it across the room.

He tried to shut out the woman's jeers. What was it that Santayana had said? That those who forgot history were destined to repeat it? Cutting off the study of history and language before 1900 was a little like a doctor's ending a physical examination at the head, as if trunk and limbs didn't matter. *Stupid, strident illogical*, he told himself, then winced.

The one time *he* had been stupid enough to say that, "David, you're from the inner city yourself," Lambe, from Biochem, had reproved him. "A man with your background shouldn't be that snobbish. Merry, who's been organizing the Free Studies movement on campus, is one of my grad students. She told me that every time a man says a woman is strident, it really means that he is frightened by her assertiveness. I didn't think you were sexist."

That was probably Lambe's grad student right now, disturbing his concentration with her assertiveness. He'd seen the woman once. Even the drab, ideological correctness of her jeans and workshirt hadn't concealed a spectacular figure. Her eyes had smoldered beneath huge glasses as they assessed him. *Academic type, probably hostile*. Then she had met his eyes boldly. He was older than she, established in his field — but those eyes of hers threatened to draw him in, to lure him to follow her as Lambe and half the university already seemed to; and he had flinched and looked away.

God damn, what she and her comrades were attacking was just his life's work, that was all! And they were winning. The woman's face and charisma might not be the type to launch a thousand ships and burn the topless towers of Ilium, but they might suffice to wreck a career or a curriculum, or so. The banners, buttons, and strange, awkwardly woven macrame vests of the Free Studies movement multiplied like toadstools all over the university; even the high-school students, ghetto-blasters at full volume, picketed the meetings of the school board to demand the firing of the Latin and advanced-composition teachers.

Worse yet, people whom Barres actually respected were beginning to make the "well, maybe they have a point" noises that were the sign that an academic was about to turn in his cap and gown for a macrame vest. The Free Studies movement seemed to turn even the most sensible, literate people into swine — though "pigs" was a favorite Free Studies description for its enemies.

Oink, thought Barres. *Oink oink*. Oh damn. He'd written it. No, *pious Aeneas* had not said "oink." So much for that sheet of paper, too. He sent it flying across the room to join the rest of the rejects. Talk about winged words: if you can't write 'em, throw 'em.

Hester Cantwell, if she weren't off touring the Greek Islands, might have used her position as librarian, as school board member, hell, as a member of one of the town's founding families, to speak calm common sense to town and gown alike — if they didn't shout her down. Never mind what else she

might do. Just that once, Barres had seen her stand beneath the moon, with the animals, the wild and the tame, to pay her homage. But she was gone now, and her house, which Hatfield (never knowing how accurate the name was) called the "temple to a minor goddess," stood untenanted, its fires out, its guiding spirit missing, and her tamed beasts driven into hiding by the chaos in the town.

"Will Latin help you get a job?" the bullhorn blared across the quadrangle. *Rhetorical question*, Barres noted. For the fifth time, he checked his Lewis and Short Latin dictionary for the accusative plural form he had forgotten the other four times he'd looked it up.

"NO!" came a shout, followed by loud, righteous cheering.

"What're you gonna tell 'em?" screamed the woman with the bullhorn.

"Studies to the students!"

"What?"

The demo burst into the orgiastic cheers that Barres knew meant that it would break up into workshops and study groups soon. He'd probably have ten people at his office hours today, from freshman distraught because their roommates jeered because they were studying Latin to grad students unable to complete their dissertations. He could sympathize.

With a four-letter word more appropriate to the Bronx, or to the demonstration outside, than to the dusty office of the John Finley Professor of Classics, David Barres flung down his pen. A blot dripped from its scratchy point and spattered — of course! — the few decently translated lines he had been able to force out that week. *Decently* translated, he repeated to himself in disgust. Barely adequate — when he had hoped for lines that rang like trumpets across the page and the centuries, making the story of Aeneas and the founding of Rome give modern readers the same thrill that it did for first-century Rome.

Sighing, he read over the first hundred lines of his translation of the fourth book. The majestic clamor of Virgil's hexameters were silenced, displaced by his tinny, inadequate English whine. If David kept up this way, Aeneas was going to sound like a treacherous fool, and Dido, Queen of Carthage, like an overage nympho from the *National Enquirer*.

And on that base note, he wadded up the lined, crossed-out yellow sheets that should have been his day's work and hurled them at his wastebasket. Grabbing up his jacket, he headed out the door so fast that he nearly walked over the graduate students who sat on the red linoleum outside, waiting for other professors. *Popular* professors, not aging classicists who couldn't write a word.

He had been wrong. No one had come to *his* office hours. He was useless. He might as well go home.

He stalked by the students with a muttered apology, then glared into silence the two who leaned against a marble column supporting the mock-heroic bust of some academic ancestor or other.

"Rough day, professor?" one asked with sympathy that Barras loathed himself rejecting, while the other simply whistled.

"Who put a bug up him?" She had a crown of braids and eyes that seemed flecked with yellow, David noted. Attractive, in a sullen sort of way, but a real exotic for Hatfield. What was she doing here anyway? Why'd she have to be here? he wondered. Damned scientist-types.

David fled before he could hear his student's reply. For the first time since he had entered a university, thirty years ago, he was glad that it would be closed tomorrow.

Then it hit him. He had seen that woman before, had heard her voice . . . distorted by a bullhorn. *That was Lambe's grad student, that was the activist who'd turned Hatfield into a madhouse and his university into a pigpen; and if he had stayed around her one instant more, he would have had to take two cold showers instead of the one he intended to get into right now.*

Under the heavy cap with its atrocious plaid earflaps, David Barres's thinning hair had gone limp with sweat half an hour ago. His breath puffed white and heavy in the October morning, and blisters were beginning to puff out beneath his gloves.

The third time an inept stroke sliced off a few wood chips and almost nicked his foot too, Professor Stemple's husband lifted the axe from David's hands. "Why don't I cut and you stack wood?" he suggested.

Barres straightened up with a sigh, then turned away from the sight of the Green Revival "temple to a minor goddess." It was empty now. God, Barres wished Hester Cantwell would come back — *or should I say "goddess?"* What could he do? Borrow her keys from the Stemples and claim sanctuary at her cold hearth, whining like a tamed beast, "Hester, I need you?" She would have curled her lip at such spinelessness. But his translation would have been dedicated to her, muse and friend: just as well that she wasn't here to see him flounder.

Stemple swung the axe tactfully at the nearest log. David blinked. But bending and puffing, puffing and straightening helped David overcome his sudden impulse to cross the corner at Oak and Appian, and crouch at the threshold of the old Cantwell place until Hester returned.

He'd taken to driving or walking by the "temple to a minor goddess" at least once a day. Just as well. Knowing that Hester was town librarian made her house a target for the Free Studies movement. Twice, it had been toilet-papered; and once, some barbarian or other had sprayed four-letter words on its white siding.

The unrest in Hatfield was a bad spell that surely Hester would not permit in the town she had guarded for so many years. If she returned, she might be able to end it. *If she returned.* He had only her assurance that she would call him to drive her back from Boston; that, and an aggravating postcard from Athens, "Thank you for warning me that the Parthenon is a ruin.

I love it anyhow."

She promised, Barres. You know you can trust her. But the child in him whined, "She's not here now!" And Merry and the Free Studies movement, loud, active, revolting magnetic, were. *Hester, if you don't get back, you may have nothing to come back to.*

Stemple grounded the axe. "Stitch in your side?" he asked David. Abruptly, he realized that he had forgotten to stack the wood and bent to the task. Stemple joined him.

"Really ought to strip the siding from that shed, don't you think?" he asked.

David eyed it, trying to appear knowledgeable, then gave up. "I'd be better at stripping cars," he said, and Stemple smiled. There weren't many of his colleagues in Hatfield to whom he had admitted his Bronx origins. The Stemples, and Hester Cantwell.

He was glad when Stemple asked. "Want coffee?" and led the way through the side door and mud room into the farmhouse's kitchen, larger than most of the apartments he had lived in before coming to Hatfield. Coffee led to muffins and a huge scratch meal of eggs and bacon. Finally, both men peeled out of several layers of sweaters and sat back, sighing with contentment.

"I'd like to pull that shed down before Jane comes home," Stemple rumbled from somewhere around the stem of his pipe. "Weren't you supposed to be at that Columbia conference, too?"

David gulped a mouthful of coffee that tasted suddenly like formaldehyde. A mathematician Stemple might be, but he obviously kept track of the classics department's schedule, too. "I canceled," he blurted.

Stemple sucked at his pipe.

"I was supposed to be the Virgil specialist on a panel about translations," David said.

Stemple nodded and tamped the pipe. He must have heard his wife talk about how David Barras had been named John Finley Professor and had announced plans to translate the *Aeneid*, a project that would either rank him with Fitzgerald and Arrowsmith or show him up as an over-ambitious damn fool.

"I'm blocked," came his confession.

Stemple lit the pipe. "That can happen," he spoke slowly. "Happens to me each time I start on a new equation. Besides, it's hard to work when there's as much confusion around as there is now. Usually, exercise or a change of scene helps me."

"I've tried that!" David's voice rose in pitch. If he lived in Hatfield the rest of his life, he knew he would never match Stemple's calm, laconic speech. "I feel like a fraud. The department elects me to the Finley, and what do I do? Promptly fall on my . . . fall flat. Especially now, with this Free Studies movement. They need me to succeed, to take a strong stand,

and I can't even do the work they hired me for. If I had any guts, I'd resign."

Stemple rose to his feet, was standing with his back to Barres, shaking out his ski jacket. "What do you say to walking off those muffins?" he asked. "Maybe we'll see an owl."

David pulled on two sweaters, grateful for the interruption. He barely winced when Stemple casually lifted his rifle down from its rack.

They tramped beside the road, slicked now with the rapidly melting traces of the season's first cold snap. The very clods of dirt underfoot felt rigid, each one distinct, beneath David's Vibram soles, the first thing he'd ordered from L. L. Bean.

"There's an owl," Stemple muttered and pointed.

"Huh?" David blinked. Where he'd grown up, there'd been two kinds of birds — pigeons and not-pigeons.

"Here." Stemple groped in a pocket and tugged out binoculars.

The owl was gray and white, with a head that seemed to disappear into its thick torso. "That owl can practically swivel its head all the way round, you know," volunteered Stemple.

David stared at its cruel beak, hooked like the captured *rostra* of ships once mounted in the Roman Forum. So much he hadn't learned when he came here: like the difference between types of owls, or neighborliness, as Hatfield called his stints of seed-scattering in the Cantwell bird-feeders or strewing bread by the library for stray deer; or the difference between the rifles that Stemple prized and the Saturday-night specials that Barres had seen in pawnshops when he was a boy.

Stemple laid a hand on his shoulder, tentatively, as if he were taking a liberty. "I wouldn't let writer's block bother me," he volunteered. "You've had a pretty eventful year. Besides, this isn't the city. No one out here's ever in much of a rush. Why don't you forget about the kids rioting; they do that every couple of years. Instead, you just head on out to Columbia, maybe give Jane a ride back and save her a trip on the bus?"

That would be neighborly, wouldn't it? David thought. He nodded. "May as well," he agreed, proud of how he had mimicked Stemple's speech patterns. Time! He only wished he could mimic Stemple's attitude toward that, too.

"Take it easy," Stemple went on. "After all, Rome wasn't built in a day."

"How'd the panel go?" Barres dodged one last question from a foreign graduate student determined to quiz him for the best English word to translate *pietas*, then walked over to shake hands with Peter Black, who'd been in his year in Medieval Studies before moving downtown to Wall Street. Whatever he was doing there, he looked . . . well, "prosperous" would have been Hatfield's description of the heavy — and unrumpled — Harris tweed jacket, the knitted cashmere tie, and massive watch Black wore.

"Not bad," David said. "Nagy got onto the Homeridae again, but admit-

ted that the *Aeneid*'s different, since you've only got one author. You ready for lunch?"

"Glad to get out of here," said Black. "Whenever I come to one of these things, I always think that the people who know me expect me to sack Rome or something like that, all by myself. You people discriminate against medievalists, you know that?"

David chuckled at the familiar complaint.

"But, because us medievalists understand generosity, I'll buy you lunch. You mind running down to Wall Street beforehand? I need to check my office."

"On Saturday?" David asked, and Peter Black shrugged.

"An analyst's work is never done. Some of these young kids, the ones with M.D.A.'s, you wouldn't believe how fast they can crunch out the numbers. I have to keep on my toes."

So did Barres as they dodged beneath the scaffolding on Pine Street, between the thieves' bazaar of fake designer clothing and the huge Dubuffet sprouting like a megalomaniac toadstool from Chase Plaza. A few more quick turns — "For God's sake, David, you were born here; you can walk faster than that!" and Black slowed his pass at a black ziggurat, then hustled David into an elevator that rose with such momentum that he swallowed hastily.

David had only impressions of ranks and ranks of desks, screened one from the other by accoustical silk and wood paneling, before Black unlocked a door. "My office," he said. David contrasted the aged clutter in his library cubicle with the wide, blank desk, stacked with computer printouts and galleys, the hugest Cross desk set he'd ever seen, and the IBM "AT — unbelievably fast. Good memory. You could use it for textual editions."

Green letters and numbers flickered as Black manipulated his spreadsheets, exited LOTUS, and signed with relief.

"Still cranking it out?" came a voice from the door. A man about the age of a first-year grad student leaned against it, grinning maliciously. Behind him whined a high-speed printer.

Black grinned back. "Course. How's your 'buy' recommendation on semiconductors?" He made no attempt to introduce Barres to the newcomer.

The boy seemed to flinch. "Damned editor threw it back at me. Says I'm writing jargon. What's she know anyhow? If she had any brains, she'd be an analyst."

"Maybe she knows English, do you think?" The boy blinked, but had a comeback.

"So where'd it get her?"

Barres winced. Even here, he couldn't escape the Free Studies movement. His friend was staring at the interloper, waiting for him to take a hint.

"Well, I'll be getting back to work," he said finally. "Nice meeting you,"

he flung over his shoulder at David Barres, to whom he had not been introduced.

Peter Black snorted. "Hotshot," he said. "Twenty-four and right out of Stanford. A real pain. I'm glad he saw me here. When you have to play catch-up ball to start with, you can't have kids like him thinking you're slacking off." He sighed and rubbed a finger inside the collar of his monogrammed shirt. "Well, what do you feel like eating?"

Barres hadn't thought that Wall Street boasted anyplace that looked and felt so much like a faculty club. But the green-painted walls of Harry's, the old rugs, the dark leather upholstery of the heavy chairs, the linen of the tablecloths, and the low-voiced, eager courtesy of the waiters reassured him. *Good, he thought. Maybe I could switch jobs. Maybe it wouldn't be too bad. Peter seems to manage.*

He sat back and listened to Peter settle the important choice of a California, rather than a French, red to accompany the wickedly expensive loin lambchops and fresh asparagus. (Hollandaise sauce on the side, Black ordered, with some regret and another tug at his tight collar.)

They talked mild academic shop as their food was served.

"You were old Cantwell's student, weren't you?" Peter reminisced. "Any of his people still in Hatfield?"

"Just one," Barras said. "A daughter."

Black nodded, then turned the subject with tact that Hatfield would have understood. They fell silent as the waiter cleared, then crumbed the table. David waved away dessert and the offer of a Benedictine.

"Good," said Peter. "Can't get flabby. But you're looking remarkably fit. Hatfield must agree with you."

"I get plenty of exercise. Stacking wood, mostly."

Black chortled. "Did you ever even see a woodpile before you went out there?"

"Hell, no?" *Let it come now, Davy boy*, he told himself. "But it's better than not working."

Black raised an eyebrow, a gesture that reminded David of Stemple. "You were translating the *Aeneid*."

"I'm blocked." He took a careful sip of coffee. "They gave me the Finley, they trusted me, and I'm screwing up. We're having student demos, and if the kids get their way, there may not be a classics department, much less a Finley Professorship. I'm not strong enough to help now, and I can't stay there under false pretenses, now can I? That's why I'm glad we could meet for lunch."

He drew a careful, deep breath before he gave himself irrevocably away.

"Can you help me find a job?"

"What the *fuck*?" When they'd been students, Black's voice from the lectern had been known to rouse even the most hung-over jock who dozed

through Monday morning classes. David Barres flinched, then sank back. "Sorry," said Black. "You wouldn't believe the way people around here talk."

You ought to hear them in the library quadrangle.

"I guess it's contagious. But what the hell do you mean? Man, you got the *Finley*; you're in Hatfield, you're set for life. What do you think you're doing?"

If I can't work, if I can't take the protests, how can I stay there?"

"Work it out, Dave," said Black. "We all block. Remember the time that woman in French couldn't write for two months? She was hysterical until you told her to write herself a letter about her dissertation. Then she did seventeen pages in one night."

"Yeah, and called me at four A.M. to tell me about it." Barres laughed.

"Look. You *don't* want to be part of the corporate racket, not if you can do your work without a shitload of faculty politics or a second mortgage."

"You seem to like it."

"I do okay. Remember, I had a one-year appointment without even a prayer of renewal. So I had to make do. I'm not denying that there aren't perks here. The money's good, and no kid of mine will ever have to do what we did to get through school. Remember the time Turtledove had to give up beer till the end of the term, he was so broke?"

"Jeannie's kept up," Peter smiled. "She teaches part-time. My salary lets her do that, and we can get all the journals. But" — he rubbed at his collar again — "you remember the story of the two leopards, the wild cat and the one who was the rajah's pet? One night, the wild leopard sneaked into the rajah's palace to talk to his friend. He was sleek and glossy, he had the best of food, of care — all but the one little spot on his neck. The spot where his collar and chain galled him when the rajah took him out on hunts."

"I've got that spot, Dave," said Peter Black. "I've got it, and I know it. But you don't. You go back there and write, dammit. For all of us."

"But I can't!" *God*, David Barres thought in disgust, *I sound like a freshman*.

"Yeah, sure," said Black. "And I'll remind you of the time I had that lecture course on epics, remember? Professor Lord was a visiting professor that year, and I had a section of freshman who just weren't getting the reading done. Remember what I told them?"

"Get a jug of Almaden, start drinking, and when they got halfway through the jug, to start reading aloud. Two of 'em got sick, but they got the reading done."

Both men laughed. "Of course, when we got to *Beowulf*, I changed the prescription to beer or mead. You match the poetry to the wine, Dave. What have you got to lose by trying it?"

"Time," said David. "At this rate, I don't think I'll ever finish."

"Ahhh," said his friend. "The lyf so short, the craft so long to lerne . . ." if

you remember your Chaucer. All good poets feel that way. Come on, David. Just try it. Think about the critics — and forget those monsters in the quadrangle.”

The rest of the conference passed in an alcoholic haze and mutters of “Barres certainly is celebrating the Finley chair. Think he could sit up straight if he tried?”

Jane Stemple simply pursed her lips, reminding her colleagues that David Barres was not the first classical scholar to enjoy a gaudy night or three, and that he would not be the last. She even offered, Sunday evening, to share the driving.

Traffic was light, thank God. When David finally staggered into his rented house, there was even a postcard from Hester Cantwell waiting for him. From Chios, this time. “The sea really is wine-dark,” she wrote.

The problem was, which wine?

October passed rapidly, and the date of the annual faculty colloquium neared. The date of his disgrace, if he didn’t have at least one book of the epic in draft by then.

He didn’t. Hell of a Halloween he was going to have, tossing ink-smeared paper at a wastebasket, he told himself. A notice in the university newspaper caught his eye. A student-faculty wine-tasting? On Halloween? What the hell. He called and made his reservation.

The room was too stuffy and crowded with people, all intent on bottles. Some had come in costume and seemed eager to get as drunk as possible as quickly as possible. Only a few tried to taste, rather than gulp, the wine. Barres rinsed his mouth, then looked at his notes. Which of these varietals, he wondered, would go best with Virgil? Trouble was, they didn’t seem to stock Falernian these days. If he only had time, David thought despairingly. There never was enough time. He could see himself ten years from now. “That’s old Professor Barres. Never did publish his translation of the *Aeneid*. Well, you can’t always predict which faculty members will work out. Think he’ll ever finish it?”

He switched glasses. One day they’d find him incredibly old and three days dead in his office. And *then* they’d see the stacks of scribbled notes and blank paper and know what a fraud he’d been. If he only had more time! “I wasted time,” he muttered, quoting Shakespeare, the last resort of writers with writer’s block, “and now time doth waste me.”

“Did you say something?”

David blinked owlishly up past a rather impressive bustline and into the gold-flecked eyes of the woman who he knew only as Merry, biochem grad student and leader of the Free Studies movement. Her teeth glittered brilliantly at him. Maybe she didn’t remember what a boor he had been.

Her next words, though, dispelled that hope. “Feeling better? You were

bent out of shape that day in the library. I'd been hanging around, hoping to meet you."

"Why?" If anyone had been that blunt around Hester Cantwell, she would have arched one fine eyebrow slightly to indicate her opinion of such bad manners. "I beg your pardon," Barres added hastily. "That is quite rude of me."

"Now you're just being polite," accused the woman. "I liked it better when you said what you felt. Us Free Studies types believe in confronting problems, not dodging them. And you have to admit, we've really been walking all over your turf."

At least, Barres thought, she didn't say, "We've really been like walking all over your turf."

"You have, at that," he murmured as the back of his neck turned the color of the wine he gulped. What was that scent she wore? When he was a student, most biochem grads smelled of formaldehyde. This scent, heavy with musk and spices, certainly didn't belong in a laboratory.

"You know," she said, "we don't want to put you old . . . faculty from the more conservative fields out to pasture. We ought to talk about this. Dialogue, that's the best bet. Besides, I've wanted to meet you for a while. I'm Merry — that's short for Maria Paleologus."

"That's a fine old name. Do you speak Greek?" he asked, doubly ashamed of his rudeness. Maybe she had wanted to meet him just to have someone with whom to practice speaking *demotika*, and he had stalked right by her.

"My folks do. I don't have time for old languages." Once again, that brash condemnation of history, tradition. *Why do you let yourself in for this, Barres?* he asked himself. That perfume seemed to emanate from the neckline of her clothing. He forced his attention upward, met her eyes, and stood mesmerized by the flecks of gold in their depths. *What I ought to do is end this conversation politely and go home*, he told himself.

"I really do want to talk with you," she repeated. "Say," she glanced at her watch, "you know Professor Lambe?"

"Is he your advisor?" he asked.

"Not for long now. He's leaving to go into private industry. More bucks there. Some of the FSM and the biochem people are having a party for him at the labs tonight. At eleven. Want to go see a film at the union and kill a couple of hours before we hit the party?"

David glanced about.

"It's *Amadeus*," Merry Paleologus offered. What could be more appropriate than a professor accompanying a science student to a film about a great musician? He was enlarging her perspective, wasn't he? They might be able to discuss the Free Studies movement. Perhaps he could even persuade her . . . of what, you idiot? *The importance of studying Latin — or of your getting laid tonight?*

That thought was pure, primal Bronx. Maybe he, too, was reverting.

Another glance round. No one from Classics, and only one or two junior people from English or History were present. If he left with a student, even with a student as attractive and controversial as Merry Paleologus, the word wasn't likely to get out. "That would be delightful. Thank you."

"God, you're all stiff and formal, aren't you?" Merry laughed. "But never fear, we'll take care of that."

Mozart sat at his billiard table, scrawling notes with one hand, and, with the other, flicking a billiard ball at the cushion. "*Rex!*" Thomas a Celaeno's mighty rhymed lines played over the toss and thump of the billiard ball and the scratch of the pen. "*Rex! Rex tremendae maiestatis.*"

"Sounds like he's calling his dog," whispered Merry. "It's almost eleven now."

"I want to see this," muttered Barres.

"Shut up!" came the hiss.

They were very near the end, he thought, both of the film and Mozart's life, as, ailing and desperate for money, he accepted Count Walsegg's commission to write a Requiem, the fierce chords of which echoed in the composer's head as he rolled a billiard ball. He didn't even need a keyboard.

A door squealed open, and Mozart looked up. Abruptly, the stupendous music ceased.

"Let's go!" Merry tugged at his arm. He shook his head.

On the screen, the door closed, the billiard ball began its transit from hand to cushion to hand again, and "*Qui salvandos salvas gratis*" roared out over the soundtrack. The door opened again, and the music ceased. . . .

Like his block, his damnable writer's block. When Mozart was David's age, he'd been dead for ten years. He couldn't bear this.

Merry tugged his arm again. Her scent rose to engulf his senses, and he yielded and followed her.

Once outside the lecture hall where the film had been shown, he held her coat for her. Clearly unused to the attention, she laughed. "That film," she pronounced. "*Bo-ring!* This should be more fun. All the people in Chem have a contest to see who can come up with the best new drink. You'll love it."

Was he paranoid, or had she emphasized *you* ever so faintly? Well, he couldn't back out now.

The campus was cold and dark, but not silent, as costumed hordes of students ran by them in all directions, their disguises even more bizarre than ordinary dress. "*At least they wear costumes at Halloween now,*" Jane Stemple had observed. "*One Halloween, I believe what they call streaking was fashionable, and we had a thousand-person streak. Remarkably like a frieze, all noble and nude and antique. It was most interesting. The infirmary saw even more of them than we did when they came in to be treated for frostbite.*"

Barres chuckled. "Professional in-joke," he explained weakly to Merry. Her dark eyes narrowed until the gold flecks in them glinted, but she did not press him.

The Walpurgisnacht atmosphere was even stronger in the labs, where retorts half-filled with glowing liquids glistened and bubbled by way of decoration, and a black-light generator — oh God, it had been almost twenty years since he'd last seen one of them — cast graveside light on the lab coats many of them wore . . . *over surprisingly little else*, Barres noted.

Merry peeled out of her jacket, then her sweater, then the shirt beneath it. Beneath that was a sleeveless crimson leotard against which her bare arms were very white and shapely. She shook her head, loosening her braids, before she shrugged into a lab coat. Barres was sorry that she had covered her arms and shoulders.

"Barres!" shouted Professor Lambe. "Merry, you're a wonder."

"Like Sergeant Preston of the Yukon," she laughed, "I *always* get my man. Now, can we get a drink?"

"Don't be such a stiff, David," Lambe told him, flinging an arm about his shoulder. "I like to be pals with all my students. And besides, after tonight, they're not going to be my students anymore. Besides, isn't there some Latin verse or other about getting stinking drunk in a tavern?"

"Twelfth century," said Barres. "Not my period." He accepted a glass of punch from the beaker heated over a Bunsen burner.

"Turn up the music!" came a yell that drowned out their voices.

"What's that?" Barres asked.

"Huh?"

"What's *that*?" he screamed over the raucous yelps and cries that wailed from a behemoth radio.

"It's *Fame!*" shouted Merry, and started to dance, singing along in an affectedly funky drawl, " 'Ahhhm gonna live forevahn/Light up the sky like a flame — Fame!/Ahhhm gonna live forevahn . . . Baby, remember mah name . . .

"Come on, dance!" She pulled him into the dance. To his astonishment, he felt his body catch the rhythm — *all those break-dancers I saw must have taught me something* — and found himself picking up the chorus.

Time and thought fled as he danced, spinning and thrusting in movements new to him, losing himself in the unfamiliar, compelling rhythms of the dance, the play of capering bodies and shadows against the lab equipment and the dimly lit walls. At one moment he was whirled off into a crowd of sophomores, who cheered his attempts at a solo; at another, he bumped

"FAME" Lyric by Dean Pitchford. Music by Michael Gore.

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against a counter occupied by a cage of guinea pigs who squeaked and eeped in terror at the singing, stamping humans all around them. Finally, he found himself gazing at Lambe, who stood in the center of the dance floor, passionately kissing someone — Merry! — until hoots and cheers made him release her.

"Whooo!" Merry and Professor Lambe sagged against a counter. Then Merry sauntered over toward Barres, smoothing her braids back on her shoulders.

"Come on, David, let's have some more punch."

"I think I've had enough," he said. It was getting late, and he wanted his head clear tomorrow morning. He had to try to translate, didn't he?

"Just one more," said Lambe. "This stuff is new, special." He reached for a beaker high on a shelf and poured it into a flask etched in milliliters.

"How do you tell if it's booze, and not hydrochloric acid?" David asked.

"It's labeled, see? Perfectly safe. Hmmm, one hundred . . . two hundred milliliters . . . here you go, my lad. Drink up!"

David picked up the thin flask, raised it to salute them, then stopped. What was it about their faces that caught and held his attention? Lambe was staring at Merry again. He looked glazed, almost desperate . . . *jealous, even*, he thought. But he had welcomed David . . . *because she wanted him to*.

"Come on, David, bottoms up!" Merry cried, clinging to his arm.

He sniffed the drink. It was strong enough to make his eyes water, and sweet, so sweet. Not even Mavrodaphne or the Mogen David his grandmother still insisted he drink each Passover was that syrupy.

What's in it? he started to ask . . . and then saw Merry. She had shucked her lab coat, and her braids had fallen down about her shoulders, glistening now from sweat . . . or was it? *You've seen a woman shine before, David*, he thought. *In the snow. Hester Cantwell stood in the snow, with a white light all about her.* . . . A golden light surrounded Merry Paleologus, like the sun-gold flecks in her eyes. Where had he seen eyes like that? Sun-gold . . . the daughters of the sun all had those golden-flecked eyes.

"Come on, David," Merry repeated, and drew close to him. Her lips were deep crimson, and her eyes wide, the gold flecks spinning. . . .

As she watched him, idly, she turned a lever which spun a wheel in a cage filled with guinea pigs. The gold in her eyes seemed even brighter than usual. Daughter of the sun . . . who had eyes like that? He tried to think, but the drink's fumes were already steaming in his brain, and the capering, chanting dancers were distracting him. Coffee, strong coffee, he thought, but the glass was rising toward his lips, the first drop. . . .

It isn't coffee you need, man. It's moly. The thought shocked him to stillness and sobriety.

Moly. The herb that had protected Ulysses from Circe, daughter of the sun, with her gold-flecked eyes, and her braids, her white, white arms — and her pigs. Boars, they were in the *Odyssey*, but pigs, he thought muzzily,

were pigs: guinea pigs, boars, bores, or simply people making pigs of themselves like the kids against whom people like he and Stemple protected Hester Cantwell's home, like the vandals in the quad, like Lambe, who stared at his own grad student with what passed for his soul in his bloodshot little eyes — or like the cage full of lab animals with which Merry was toying now.

Bad enough she has them, Barres thought. *I won't give her me, too*. No wonder he couldn't think, couldn't write, hadn't been able to work for months. Merry — or Circe — didn't care about such things. What she wanted was worship, adoration, and violent release. And if she wasn't offered them, she tried to take them.

Not from me, you don't, he told her silently. Too bad about Lambe. But he had to get free.

He set the glass down.

"Come on, David, don't be a spoilsport," Merry urged.

"Don't be ridiculous, man," urged Lambe. "Look how much fun everyone's having."

"What'll it do?" Barres said. "If I drink it, will I live forever?"

Merry was shaking her head. "But you'll feel that way. Come on, David." Her breath was sweet in his face, and the pressure and promise of her body against his arm and side make him tremble. "You've made such a good start. Come join us!"

Ulysses had a sword, David didn't. "Go to hell!" he shouted, and raced down the stairs, caroming from wall to banister, and out into the night.

The cold cleanliness of the moonlight and the night winds struck him sober. Then the assortment of wines and whatever devil's brew Merry and Lambe had tried to make him drink hit him, and he doubled over. He fell to his knees and crouched, retching up wine, cheese, and whatever potions he had drunk at that party. And when, surely, he thought his stomach could hold — and reject — no more, up came all the fears and frustrations of the past few month.

Why me? he moaned between spasms of sickness. *Because you were vulnerable*, something sane and sober in the back of his mind told him. *Lambe was lost before he started. Stemple — for God's sake, can you imagine Merry trying her wiles on him? But you — you're six of one thing and half a dozen of another. She had a chance with you.*

He gagged at that idea, and all the snobberies of the past twenty years came up: his fears, his painstaking make-over of himself into something Hatfield could accept, his discovery — for all the wrong reasons — of a subject and a town he could love. And then this betrayal!

Sirens howled out, and campus police poured into the lab building, emerging moments later with a horde of sweating revelers, Lambe . . . and Merry.

"I suppose you turned me in," she spat at him as she was hustled by.

"In . . . no shape . . ." he stammered.

"What are you talking about, miss?" asked one of the cops, who bent over to inspect Barres, who huddled beneath a tree, shaking. "The man's got food poisoning. Don't know what you served in there, but you're not getting the chance to serve it again. Why, this is Professor Barres, anyhow! How're you doing, sir? We'll get you to a doctor right away."

The security guard helped him rise. David was grateful for the hand holding him by the arm. Sick as he was, exposed as he had been by Merry and by his own insights, he thought that only that grip tied him to the earth. Otherwise, he might have blown away, a flimsy, gibbering thing on the night wind, and become in truth, the nothing that he now judged himself to be.

PROFESSOR BARRES'S OFFICE HOURS CANCELED DUE TO FLU, said the notice that the department secretary pasted on his office door. People seemed kind enough to believe it. In a veritable epidemic of neighborliness, offerings of soup and fresh-baked bread appeared in his kitchen, and the morning mail was brought in, probably by the same people who fed Hester Cantwell's animals. He noticed in the school paper that the dean had forbidden parties in lab areas. The school board met, accepted the petitions, and promptly announced its support of the teachers it had hired. And in a guest editorial, Merry Paleologus denounced the university and proclaimed that she was leaving for Crete.

Bon voyage, Barres thought. Perhaps she would meet Hester Cantwell there. Now, that would be a battle for the ages, wouldn't it? He pondered it, chucked it to take a nap, then woke, chuckling at an unlikely thought. Had *he* and his refusal to enter Merry's world stopped her conquest of town and faculty?

Some champion. He still couldn't write.

Don't think about it, Barres. Just get well.

The morning mail brought another one of Hester Cantwell's postcards. From the Kyklades, this time. "I have fallen in love," she wrote, much to his astonishment, "with a *kouros* carved in white marble, and with the most delightful archaic smile. Keats is right, you know, about immortality."

When Keats was his age, he'd been dead for *twenty* years. Barres groaned and buried his head in his hands.

By the time Barres was able to sit up without feeling an immediate need to lie down again, or pick up the telephone without wincing, he learned that flu had struck the entire university, except, of course, for Jane Stemple's husband. He, of course, prescribed exercise and open air until, as his wife observed, "perhaps David might best be left to recover in his own way — and at his own pace?"

Rome's pace, Rome's race, he thought, lacing his boots. Yesterday, he had raked leaves for fully half an hour before he staggered inside and dropped onto his sofa, dizzy and sweating. Today, he planned to drive out to the

Quabbin Reservoir and walk there. At least he would see the last of the autumn foliage.

After parking (but not locking) his VW, David wandered past the tower, now unused and out of repair, down toward the reservoir itself. Beyond it rose the familiar, gentle slopes of the Holyoke range, covered now with leaves that were russet or fading to browns. The wind blew, and he pulled his collar up around his neck, then stepped out briskly along the shore.

He had thought that in coming to Hatfield he had reached a kind of academic Arcadia, but EGO IN ARCADIA, ran the legend beneath the most idyllic paintings. Even Arcadia could not shut out decay and death: the skull beneath the pastoral.

Perhaps . . . had he been wrong to reject Merry's potion, her songs that promised that he could live forever? He didn't think so, not at the price: raucous, animal noises; disregard for everything that mattered to him — and what of his work? There was no civilization on Circe's isle, and all his life, he had prided himself on being a civilized man.

What of it? He hadn't written for weeks. He would have to admit it soon, he knew that. Admit it, and offer his resignation. The wind was brisk. It made his eyes water, he decided, and scrubbed angrily at them.

Cloud-shadow scudded across the slate-colored water. "That time of year thou mayst in me behold," lovingly he drew the words of Shakespeare's sonnet from his memory, "when yellow leaves, or few, or none. . . ." what was that trick of the light?

Not ten feet away swayed a birch tree, its delicate boughs bare, all except for one cluster of golden leaves on a low-hanging branch. He pushed forward, raised his hand to the bough, and plucked it. The wind rose, then fell suddenly silent. Abruptly, the ripples on the water ceased, and a silence fell, a silence broken only by . . . pawprints? footprints?

He had a tire iron back in the car. To his own surprise, however, he made no move to run back and get it, or flee from whatever man or beast chose to join him on his walk along the shore. Holding the bough as if it were a beacon or a blade, he started forward.

A tall figure walked toward him, her skirt whipping about her legs, her hair flowing back from a tanned brow. Beside her paced two deer and a small cat with the pointed face and huge eyes of the local wildcats.

"Hello, David," said Hester Cantwell.

He blinked. Her original plans had called for her to return after Thanksgiving. "You said you would call me from the airport," he stammered.

"I saw the papers," she said. "So I came home quickly. I know I promised to call you. I didn't forget. But I checked in with Jane Stemple and heard you had been ill. So I didn't want to impose." Now there was a fine old Hatfield word for you — *impose*. "So I called Allards' taxis, and fortunately, they had a car free to bring me back." She turned and faced the lake, her arms raising as if she wanted to embrace the entire valley.

"Oh David, Greece is very beautiful, but I missed *my* home. It would be as if that birch" — she gestured at the branch he held — "were asked to be a pine tree. The pine is splendid and stately — but it's not what she loves and is used to. Or what cares for her — and needs her."

He saw her face in profile now. Despite the tan, the fine skin about the eyes was sere and creased; Hester looked thin and tired.

"Have you been well?" he asked.

"Have you?"

Better, now that you are here, he stopped himself from saying. But she smiled as if she had heard him, and the tautness of her expression seemed to relax.

Against his will, he compared her with Merry Paleologus. Physically, there was no comparison; the younger woman would make Hester look meager, insignificant, unless you could appreciate her dignity, her patience, and her need — which was to be needed. Not, like Merry, to be worshiped.

Poor girl, David was astonished to find himself thinking. *All that power, and all she can think to use it for is making trouble.*

"And how is the translation coming?" Hester had stood quietly under her gaze, but now she stirred.

He found himself shaking his head. His anger at himself had gone, leaving only sorrow for the ambitious, unfinished project.

"There have been many distractions, I imagine," she said. "Settling in and turning strangers into friends. And then, worst of all, is the discipline of submitting yourself to the work. You have chosen quite a task, David. I admire your courage."

In that moment, almost, he reached for her, but with a quick, graceful step, she eluded him and sank to her knees on the bank of the lake. Who did he think he was, to dare desire an immortal . . . Anchises? Aeneas' father had grown old and halt, but at least he had had the memory of having held, at least once, a goddess in his arms. David had no such privilege.

"When I was a child," she mused, "I used to come here and drink from the lake. 'But it's the same water that you get when you turn the tap at home,' people always told me. I never believed them. Somehow, it's more alive here: it's *free* water, not a product we buy."

She dipped her hand in the lake and drank from it, dipped again, and drank. "Ah! Some things never change."

She rocked back on her knees and looked up at him. *Drink from a lake?* gasped David's street wisdom. He could just imagine lapping a pick-me-up in Central Park. If the muggers didn't kill him, hepatitis certainly would. She smiled, and he saw how the wrinkles that narrowed her eyes and turned her slender throat crepey had faded. She seemed ten years . . . no, twenty years younger.

This was her place, her realm. It was right that the water here restore her. But what of himself? When offered a potion that might have given him a

semblance of immortality, he had fled, knowing beyond reason that if he drank it, he was lost. Now, however: beyond reason, he was tempted to kneel and drink.

Hester watched him with the grave look that he remembered. She would not offer him water from her cupped hands: nothing so blatant or undignified.

He had to trust someone, and here she was. David knelt at her feet and drank. The water was so cold that it made his teeth ache down to the roots. It tasted of flint, of earth, and of wind; and it burnt in his throat, to lie chill in his belly. He shivered once, then dipped his hand in the water and drank again. His shivering ceased.

The wind whipped up again, and ripples swelled into wavelets that shimmered across the lake in a reflection of the wind's path.

"How did you get here?" he asked. If she said she had ridden in a chariot pulled by deer and pards, he would have believed her.

"My car . . ." she gestured at a battered Audi.

"I would invite you to my house for tea," she told him, "but I have had no time to bake, and I am waiting for jet lag to find me. Besides" — her sudden smile dazzled him and made him want to weep with gratitude — "I am sure you have work to do."

Her stride even with his, she walked to her Audi and drove away. Work to do? Why yes, he realized, he had. Book four again. What was Aeneas' line? *Quamquam animam meam meminisse abhorret luctuque referret, incipiam*. Although my soul shrinks from remembrance and flinches from old griefs, I shall begin.

At the crossroads before the expressway, a deer bounded out in front of his car. He sounded his horn to warn it . . . and in his mind, he heard the clangor of a hundred horns, summoning men to battle. He pressed down on the gas. As the car surged forward, he felt once again the familiar, beloved rhythm of Virgil's hexameters. Impossible to explain, he had thought, not all that long ago.

At least now he would dare to try. He had the time.

AN ODE TO E. R. B.

John Carter of Mars and his crew
O'er the length of the Grand Canal flew
And most near lost their senses
When they saw the sunning princess.
'Tis said they had a good Dejah view!

— Arlan Andrews

SCIENCE FICTION ON VIDEO: Strange Days and Stranger Nights

FILM ESSAY

by Matthew J. Costello

This is the fourth installment of a series that traces the history and evolution of science-fiction films, the major themes, and the technological breakthroughs. Past film essays by Matthew J. Costello include "Classics of the Silent Era" (January 1988), "German Expressionism Meets Hollywood" (May 1988), and "Aliens Within and Without" (November 1988).

At first glance, it might appear that the important SF films of the 1960s appeared from nowhere. Each of the four films discussed herein seems, at first, unique, *sui generis*, and classic. Each defines the genre while also standing apart from it.

But the antecedents are there. Concerns that have been key elements of SF cinema since the days of Fritz Lang and George Méliès blossom into definitive commentaries on the specific era and the more universal concerns of humanity.

The suspicion that science can be dangerous and deadly — the Faustian dilemma — is stated in different but equally powerful ways. The strength of these statements is so powerful that some of the images — a computer out of control, an inexplicable alien disease, the environment turned deadly, and the mad truth about our friend the atom — would become archetypes and then clichés for our time.

Likewise, the technical developments would reach a state of competence and power that would change the look of genre films forever. The pioneering blue-screen work of *The Invisible Man* (cited in "German Expressionism Meets Hollywood") would produce a near-perfect illusion of spaceflight. The neorealism of '50s films would give way to the bright,

almost lustrous reality of films shot in available light, with lower-than-normal f-stops.

Special effects, a term once used with derision, would become a respected, essential part of an important SF film. The top five highest-grossing films of all time would turn out to be special-effects extravaganzas.

But there would be new, disturbing themes introduced in this incredible era. It starts with a director's obsession with cool blondes and birds . . .

The Birds (Universal, color, 1963, 119 min.) was the culmination of a few of Alfred Hitchcock's lifelong motifs. In *Psycho* (Universal, b&w, 1960, 109 min.) Hitchcock used Universal's TV wing to produce a black-and-white quickie, a haunting shocker that examined the dark side of some central Hitchcockian themes. Guilt, innocence, and the danger of tampering with fate all get their most excruciating examinations in *Psycho*. And, for the first time, the gloves are off as Hitchcock provides brutal consequences for the people who violate the rules of his moral universe.

The distance from innocent Cary Grant's suave Roger Thornhill being chased by a cropduster in *North By Northwest* (MGM, color, 1959, 136 min.) to the guilty Janet Leigh being

cut down by Norman Bates' "Mom" appears vast. But guilt (whether real or imagined) and its consequences are the central concerns of both films.

Psycho is the black comedy version of the technicolor fantasy of *North By Northwest*. Still, at the end of *Psycho*, we have Simon Oakland, the burly psychiatrist, explaining just what sort of screwy things were going on inside Norman. We can breathe a sigh of relief — at least, most of us can. *That* sort of thing isn't going on in *our* families.

But in his next film, *The Birds*, Hitchcock removes that once-necessary element: the explanation. The director had often used birds in his films as symbols for danger (as in Norman's collection of stuffed owls and titmice). Now the birds take center stage, and this time there will be no reassuring scientist coming on stage at the end to explain just what was going on.

It was a statement that, in one stroke, ended the cycle of 1950s films, with their radiated, five-armed octopi and giant ants, and replaced them with the central question of the decade: what's happening and what can we do about it?

The Birds begins as any one of Hitchcock's light, comic suspense masterpieces begins. There's romantic bantering between Rod Taylor and Tippi Hedren, and Taylor ends up bringing Hedren to his mother's home.

But the mood changes abruptly, as we witness the birds attacking school children and gas station patrons, until the romantic leads are trapped in the house, menaced by something that no one can explain.

Windows are boarded up, but still the attacking birds find a way to get in. Humanity is put to the test, and

while it doesn't fail completely — as it would in later films where nature runs amuck — its desperation and hopelessness are new and disturbing cinematic elements.

John Russell Taylor, in his book *Hitch*, wrote that, in *The Birds*, the director was "more eager to explore atmosphere, psychology, and, at times, the darker areas of neurotic and obsessive behavior." No real explanation is given for the birds sudden change to vicious creatures; we don't know what's happening, or why.

The Birds is Hitchcock's most detailed and planned film. There were over 1,400 shots, twice as many as any other Hitchcock film. It was completely storyboarded, and, from the beginning, Hitchcock worked closely with a team that included Robert Burks (cinematographer), Ub Iwerks (once Walt Disney's right-hand man), Lawrence A. Hampton (responsible for special effects), Ray Berwick (the bird trainer), and Al Whitlock (who did the matte work).

With his think-tank team approach, Hitchcock's group was the Industrial Light and Magic of its day. The "auteurs" of the '70s and '80s would fly on the wings of master craftsmen working closely with the director, from John Dykstra and George Lucas (*Star Wars*) to H. R. Giger and Ridley Scott (*Alien*).

The film introduces another, less-savory precedent. For one week, Hitchcock's new "cool blonde," Tippi Hedren, was filmed in the attic. Live sea gulls were thrown at her, over and over. Her dress was torn, blood was dabbed on her, then more birds were thrown. When the portly director deemed that the shot wasn't sufficiently shocking, live birds were attached to the actress by means of elastic bands. Once, Miss Hedren nearly had an eye

scratched out by a terrified bird. Actress Jessica Tandy, who also starred in the picture, described it as "extreme abuse — day after day after day."

Such film violence directed against women would become common in the '70s, when legions of nubile in nightgowns and cuties in cut-offs would fall prey to the axes, knives, and claws of "relentless" maniacs, ranging from *Halloween's* loony-bin escapee, Michael, to *Friday the 13th's* fun-loving Jason. (Sigourney Weaver would end this long line of sexist stereotypes by calmly blowing the alien into space in Ridley Scott's *Alien*.)

Sound was used in a different way in *The Birds*, a pre-Dolby concern that was decidedly ahead of its time. Hitchcock said that he "decided every sound." There was no music in the film, and the director worked with composer Bernard Herrmann to create what Taylor describes as "a complete pattern of evocative sound and silence."

Hitchcock also worked closely on the script, crafting the story with screenwriter Evan Hunter. Though based on Daphne du Maurier's short story of the same name, *The Birds* is Hitchcock's unique vision, especially in the hopelessness of the ending. That single ending shot, when Taylor and Hedren sneak out to a dawn-lit porch filled with birds, was comprised of 32 pieces of film. Then, there is a slow fade to black. Hitchcock originally fought putting the tag "The End" on, but Universal insisted.

This was bleak stuff for the early 1960s, disheartening, somber, and filled with despair. It also presaged dozens of "nature-gone-amuck films," a variation on the "oversized creature" phenomenon of the '50s. In the '60s, there would be out-of-control spiders,

frogs, rabbits, and piranha — the latter, surprisingly enough, resulting in two rather entertaining and amusing films directed by Joe Dante (*Gremlins*) and James Cameron (*Aliens*).

But in *The Birds* there are no answers. And in this, Hitchcock's most personal fantasy: all of mankind is guilty and punished.

Stanley Kubrick is responsible for two of the SF masterpieces of the '60s. And while they seem about as different as two films can be — one a hilarious black comedy about the coming Armageddon; the other a transcendental, mystical space epic — they drink from the same well of their time. In addition, they both draw on motifs present in SF since the '30s.

From the beginning, Kubrick's filmography was unusual and personal. Outside of *Spartacus* (1960), for which he was merely a "hired gun," Kubrick's films were very much *his* films. He confused and intrigued audiences and critics regularly.

Kubrick's work as a *Look* photographer led to some small documentaries and his first feature, *Killer Kiss* (1955). But it was his antiwar *Paths of Glory* (1958) that set a pattern for Kubrick as a striking director who dealt with important themes. After *Lolita* (1962), a darkly humorous dissection of late '50s America, Kubrick had the commercial clout to demand, and get, total control of his movies.

The backdrop of *Dr. Strangelove* is an unavoidable nuclear holocaust. In this setting, Kubrick sets up a racy, satirical conflict between modern war and libidos. Michel Ciment, in *Kubrick*, his definitive study of the director, points out the sexual connotations of the characters' names: Strangelove, Kissoff, Buck Turgidson, Mandrake, and Merkin.

Based on Peter George's serious novel, *Red Alert*, Kubrick and co-scripter Terry Southern (author of the erotic satire *Candy*) fashioned a mad story of the nation's defenses gone awry. When General Jack D. Ripper (broadly played by Sterling Hayden) sends his squadron of SAC bombers to Russia, the Pentagon's War Room is thrown into a panic.

General Ripper's base is eventually overrun, and the recall code found for the errant bombers. Except one bomber fails to respond, and continues its merry, patriotic way into Russia, cleverly flying under radar.

Pilot Major T. J. "King" Kong (Slim Pickens), first seen reading *Playboy*, has to free the warhead from the bomb bay, and he ends up riding it to its intended target like a wild bronco. The holocaust begins, accompanied to wry strains of the ballad, "We'll Meet Again."

The film was named on the *New York Times*' list of "Ten Best Films of the Year." Beyond its prescient mix of love vs. war, it points the way to the concerns of the post-Kennedy '60s. (The film was made, but not released, before the assassination.)

Critics Kenneth von Gunden and Stuart H. Stock point out that "audiences were unsure how to respond to *Dr. Strangelove* when it first hit the nation's theaters." The combination of black humor, political satire, and apocalyptic slapstick was totally new. It was a sensation that would grow more and more familiar as the complacent '50s melted into a nostalgic memory. Laughter and black comedy in the face of grim authority would be commonplace in the campuses, streets' and courts of late '60s.

Now that the era's dust has settled, we can look at the film and simply enjoy its brilliant comic moments:

Sellers, as Strangelove, rising out of his wheelchair, proclaiming "Mein Fuhrer! I can walk!"; or Strangelove suggesting that the group repair to a nearby, nuclear-safe bunker where 10 attractive women could be supplied for each man; or George C. Scott arguing for a full-out attack on the Russkies ("I'm not saying we won't get our hair mussed, but I do say no more than 10-20 million killed, tops — depending on the breaks.").

But Kubrick's apocalyptic comedy takes things more than a step farther. We are presented with the idea that all authority, not just the wigged-out scientists, is to be questioned. There is no one in *Dr. Strangelove* who seems competent and responsible. Even the President of the United States is reduced to wimpy, puzzled expressions as he tries to find out just what went wrong and how to stop it.

The "look" of the film was also something new. Kubrick shot *Dr. Strangelove* in available light, often with f-stops set in a range between 2.8 and 4 (the norm was f8). John Alcott commented that "the film's brilliant, clear white light is due to that range." This gave the film a bright, realistic look, far removed from either the shadowy expressionism of the '30s or Hollywood's flat realism of the '50s. Kubrick would go on to use this technique of filming in 2001, giving it a look unlike any other SF film.

Ken Adams designed the *Dr. Strangelove* sets, including the massive oval War Room — real, yet surreal, in its high-tech gloom. He would go on to design dozens of futuristic decors, from *Dr. No*. to *Moonraker*, establishing set design as a key element in SF cinema. In *Alien*, for example, the sets, including the abandoned alien ship and the egg chamber, are crucial to the impact of the film.

Technically and thematically, *Dr. Strangelove* foreshadows Kubrick's magnum opus to come, a labor of five years that would result in a science-fiction milestone. Kubrick cut from the screaming "yee-haw!" of horny Major T. J. "King" Kong riding a nuke through the air to a space shuttle carrying its subdued passenger to a space station.

The title of his next film would also have a colon. Mankind would once again come to an end. This time though, there wouldn't be anything too funny about it.

Kubrick's long-awaited space fantasy, *2001: A Space Odyssey* (MGM, color, 1968, 161/141 min.), was released in the new single-lens Cinerama process. It was a film nearly three hours long with *only* 45 minutes of dialogue.

2001 is a throwback to the purely visual silent films, old films that Kubrick spent hours watching and researching. But the images Kubrick created would be souped up with a technical artifice that Fritz Lang and George Méliès could only dream about. It was a film for the generation brought up on TV.

French critic Michel Ciment tells of seeing *2001* and strolling around the streets of London, just wandering, absorbing it all. He was part of a generation that thought about the film, some writing about it, many of them seeing it over and over, as if the act of watching it were a sacred ritual.

The critics, though, were unimpressed. Pauline Kael said *2001* was "a monumentally unimaginative movie."

New York Times film critic Renata Adler called it "incredibly boring." Good old *Variety* said that "*2001* is not a cinematic landmark . . . lacking the humanity of *Forbidden Planet*, the

imagination of *Things to Come*, and the simplicity of *Of Stars and Men*."

Kubrick answered them, saying, "Perhaps there is a certain element of *lumpen literati* that is so dogmatically atheist and materialist and earthbound that it finds the grandeur of space and the myriad mysteries of cosmic intelligence anathema."

Of course, gradually everyone caught on, recanting. *2001: A Space Odyssey* regularly appears on lists of the best films of all time, including the "Top Ten Greatest American Films" selected by the professionals of the American Film Institute, as well as lists from European film magazines like *Cahiers du cinema* and *L'avant-scène du cinema*.

But while the critics may have, at first, missed it, the soon-to-be deluded and co-opted youth of America got it. Those who saw *2001* over and over knew that they had seen something that transcended film as they knew it. It wasn't that absolutely rarest of things, unheard of, unexpected! It was art. And — even more amazing — it was science fiction.

2001: A Space Odyssey is now an accepted classic — perhaps the classic SF film. When Kubrick's project was first announced — the first film to follow *Dr. Strangelove* — it was called *Journey Beyond the Stars*, which certainly revealed more of what he was up to than did its final title.

Later, when the *New York Times Magazine* featured an in-progress article on the film, there was no indication that there was something completely different on the way.

Ciment points out that Kubrick oversaw every aspect of the film, from budgeting to publicity, so that nothing could go awry. The belated critical reaction to his work was already an

expected reaction.

Kubrick's collaboration with Arthur C. Clarke on *2001: A Space Odyssey* has been well documented. Although Kubrick was inspired by Clarke's story, "The Sentinel" (and Clarke worked on the script with Kubrick), Clarke says that the film is "90% Kubrick."

The result is a film of pessimism and hope; pessimism in that man would rise from the ape only to become sterile, dehumanized, almost a living machine. ("I enjoy working with people," HAL intones. But we don't believe him.) It's often been pointed out that the most human character in *2001* is HAL. The computer is paranoid, confused, concerned, and ultimately murderous.

Yet the film presents a hope of transformation, that man is only a stop on a journey to something grand and childlike. Paradise, lost through violence, through that first technological breakthrough — the weapon — could be regained.

The first 30 minutes of the film have no dialogue. The ape's contact with and education by the monolith leads to their violent victory over another, less-advantaged group. The leader hurls his tapir bone (now a weapon) into the air. It spins slowly in the sky before changing into an orbiting spacecraft. Then there's slow pan past a big, blue Earth to the shuttlecraft, *Orion*.

Still, there's no dialogue until the ship docks at the space station, when Dr. Heywood Floyd is greeted by the stewardess's bland words, "Here you are, sir." We have travelled from the dawn of man and its violence, to the vapidity and tedium of space travel.

Another monolith on the moon is discovered, triggering a signal to Jupiter. This sets the stage for the *Discovery* expedition, with its cryogenically sleeping scientists and cool-headed

crew of Bowman (Keir Dullea) and Poole (Gary Lockwood).

HAL tricks Poole into leaving the ship to replace the AE-35 unit, then cuts his air hose. HAL then terminates the life functions of the other scientists. Murder appears as it has never appeared in film: cool, invisible, and presented by data terminals.

Bowman gradually loses some of his astronaut professionalism, talking to HAL as if it were a naughty five-year old. But he recovers Poole's body and dismantles HAL, revealing HAL's almost childlike memories.

Now, for the last 30 minutes of the film, there isn't a word of dialogue. In fact, the last words we hear, when Bowman is disabling HAL's memory bank, are from a tape of the mission director on earth. The director tells about the monolith and crew's mission to Jupiter. He closes with, "it's origin and purpose . . . still a mystery."

There's an abrupt cut, and we read the title card, "To Jupiter and Beyond the Infinite" — a technique as old as film itself. Bowman guides a pod toward another monolith, floating in some mystical line made by Jupiter, its moon, and the sun.

Bowman's breathtaking journey through the stargate is guided by the unknown alien intelligence. There are many shots of his eyes filled with horror and shock. Kubrick's concern with eyes recalls *Frankenstein's* metaphor equating vision with knowledge and humanity. Kubrick comes back to the eye as metaphor again in *A Clockwork Orange* (1971).

Bowman ends up standing in a room designed to reassure him with its genteel antiquity. (It also foreshadows the period of Kubrick's *Barry Lyndon*.) Bowman's suit and pod disappear, and he finds himself eating a

gracious dinner in the rococo setting of Louis XVI furnishings.

Bowman eats with delicacy and then, with a humorous nod to human frailty and a Jewish tradition familiar to Kubrick, his glass is knocked to the floor and shatters.

Now it starts. Bowman ages, sees the monolith one more time, and is reborn. As this space fetus looks at the universe and at everyone in the theater, the World Riddle theme of Richard Strauss's *Also Sprach Zarathustra* combines with the stunning image to bypass our intellect. We feel this great destiny of human kind.

Such dependence on visuals, such utter faith in their power, was not a new idea, Critic Rudolf Arnheim, in *Film as Art* (cited in "Classics of the Silent Era"), felt that dialogue could actually weaken the power of film. Also, Fritz Lang's *Die Frau im Mond*, in its pacing and its sense of grandeur, anticipates Kubrick's work with spacecraft.

And Kubrick knew what he was up to. "In *2001* the message is the medium," he said in 1968. "I tried to create a visual experience, one that avoids verbalized pigeonholing and directly penetrates the subconscious with its emotional and philosophical content."

But at the risk of pigeonholing, there are themes that should be pointed out. HAL, Danny Peary argues in his *Guide for the Film Fanatic*, "represents both a Frankenstein monster turning on its human creator. . . and a Big Brother which, unlike the situation in Orwell, men intentionally have set up to spy on them."

But there's a new wrinkle here: man's creation is more human, more feeling. It's this theme, so foreign to the creature features of the '50s, that would come to dominate the work of other filmmakers, most notably

George Romero.

The overt, rampant sexuality of Kubrick's *Dr. Strangelove* gives way to an antiseptic, almost asexual world. Yet the Jupiter Probe *Discovery*, for all its massive seriousness, looks phallic, ejecting its pod into the stargate. And this galactic intercourse leads to the birth of the starchild.

There's humor here, too. Dr. Heywood Floyd pauses to read the instructions for the zero-gravity-toilet, provoking perhaps the film's only laugh from the audience. Kubrick satirizes the growing influence of brand names, with a Pan Am shuttle, a Bell Picture Phone, and even the Earthlight Room of the space station's Howard Johnson's.

But for all its landmark status, *2001* also taps into themes that had been kicked around awhile. Science is dangerous, never more chillingly portrayed than when the sleeping scientists on board *Discovery* have their life functions terminated. The behavior of the humans is almost pod like (witness Poole as he gets his long distance birthday message and asks HAL to raise his headrest). In Poole's flatness of tone, his lack of affect, there's a memory of the alien possession classics of the '50s.

But unlike SF films that came before it, films that explained things — things like how the scientist became a fly — *2001* raises questions and provides few answers. Michel Ciment said that the film posits an "eternally tormenting trio of questions — Where do I come from? Who am I? Where am I going?"

2001: A Space Odyssey is film as ritual, the work of a shaman using lights, magic, costumes and music to go beyond telling a mere story. This ritual was mirrored by the preyuppies who saw it over and over, washing their acid-rock souls in the living water

of high art. As Arthur C. Clark commented, "MGM doesn't know it yet, but they've footed the bill for the first \$10,500,000 religious film."

2001 represented the culmination of four years of special-effects teamwork. The concept of a team devoted to just special effects, headed by Douglas Trumbull, who went on to direct *Silent Running* (1971), would take hold. Lucas's Industrial Light and Magic and Richard Edlund's Boss Effects are the successors to Kubrick's think-tank approach to the massive effects breakthroughs of 2001.

Like George Pal's *Destination Moon*, the last serious space-travel epic, 2001 had a consultant, Frederick I. Ordway, a Harvard research scientist. Scientific accuracy was a mania for Kubrick.

Kubrick pioneered using available light, giving his ship interiors a realistic, high-tech look. There were also hundreds of monitor shots in the film, displaying data, a message from home, even death. Personal computers, and their massive impact on everything from our banking to this article, were still a good 15 years down the road.

While there were many miniatures used — such as an 8' space station, a 15' moon base (with each minindow containing its own separate piece of film), and a 54' long *Discovery* — there were also impressive full-size constructions. The working *Discovery* centrifuge, where Poole jogs, cost a then-hefty \$750,000. There was also a full-size set for the exterior of the *Discovery* where the failing AE-35 was replaced.

The blue-screen effect process, the same process used in *The Invisible Man*, is here nearly seamless. The extensive work was all hand-done (costly and time-consuming), but there is no telltale blue line to mar the

effect.

The overwhelming stargate sequence was created by Douglas Trumbull using a slit-scan process. This method of creating animation and sense of motion would be often copied but never equalled.

Some seemingly inexplicable shots were sleight of hand. When a stewardess walks upside down, using her gravity shoes, it was actually the chamber and the camera that turned. And when Bowman blows open the pod door to shoot into a *Discovery* airlock, the scene was shot upside down, looking up at actor Keir Dullea. Wires suspended his body, and he was lowered down. There were 205 special-effects shots, involving over 16,000 separate steps to realize.

The quantity of work in 2001 would be the standard by which future SF films would be judged. The era of shoddy SF effects was over (though *Star Wars* would bring back the roar of starships in the vacuum of space).

Kenneth von Guden and Stuart H. Stock suggest that, with *Dr. Strangelove* and *A Clockwork Orange*, Kubrick can "arguably be called the best science-fiction filmmaker of all time." Like a medieval craftsman, Kubrick worked on his films in the technological splendor of his secluded estate, editing, cutting, and fine-tuning every aspect of his films.

2001: *A Space Odyssey* set the cinematic pattern for less-thoughtful films to come; the control, the detailed effects and miniature work, the approach of a team. The '70s would find us entertained by films and TV series featuring breakthroughs pioneered by Kubrick. But it is 2001 that continues to amaze us.

In that same year, 1968, there was yet another very similar question

raised in a completely different kind of SF film. But there are important similarities between the two films.

In George Romero's *Night of the Living Dead* (Image Ten, b&w, 1968, 96 min.), Judith O'Dea, driven half-mad by the tireless siege of the zombies, plaintively asks, "What's happening?" And for the anxious, horrified audience, that question remained unanswered.

In Paul Gagne's *The Zombies that Ate Pittsburgh*, Romero cites Richard Matheson's apocalyptic novel, *I am Legend* (filmed three times, but never with any great success) as a key influence on the script he wrote with John Russo. Not surprisingly, he also cites Hitchcock's *The Birds*, another film about people trapped in a house.

Night of the Living Dead shattered 60-year-old conventions of horror and SF. It began a new era of horror films with startling accuracy. The innovations of *Night of the Living Dead* set the tone for horror films for the next two decades.

The story, familiar after countless Halloween TV broadcasts, is simple — very "high concept" in the language of today's Hollywood. A group of people find themselves isolated in an old farmhouse surrounded by the dead-who-walk.

The very first scene of the film signals that conventions would be played with, even discarded. In this scene, a brother and sister visit a graveyard to place a wreath on their father's grave. The brother starts teasing his sister, saying, "They're coming to get you, Barbara." And all the time, he's oblivious to the slowly trudging figure making its lumbering way toward them.

Within moments, we've witnessed our first zombie attack. The brother is killed, and the girl, Judith O'Dea flees

to the farmhouse. There, she joins a family, some teenagers, and the hero, black actor Duane Jones.

The teenagers attempt to escape and end up being incinerated when gasoline sprays all over the truck. This leads to the famous barbecue scene: hordes of tattered-looking extras munching on gooey-looking entrails.

The survivors board up the farmhouse, but still the zombies find ways in, claiming the family's daughter (who then dispatches her own mother with a garden spade). These zombies, we learn from snippets of on-screen TV newscasts, have somehow come to life because of "high-level radiation from the disintegration of a returning Venus probe." Such was the explanation offered in the film. But Romero discounted it, saying, "It has nothing to do with anything."

In the end, only Ben (Duane Jones) is left alive. As he tries to exit the farm, he's shot by a sheriff and his posse (who know the only way to stop a zombie is by a bullet in the brain).

The shock experienced by the 1968 audience is hard to imagine in this day of repetitive splatter and grue. Roger Ebert, the *Chicago Sun-Times* film critic, wrote that he "saw kids who had no sources to draw upon to protect themselves from the dread and fear they felt." U. S. critics generally reviled the movie. Romero himself said that the film "moves progressively toward absolute despair and ultimate tragedy."

And yet it's here that the strange symbiosis with Kubrick's masterpiece occurs. In *Night of the Living Dead*, for the first time, we don't know what is going on. The horror, the terror, is relentless (an adjective that producers would jump upon with relish). There are no calm, cool-headed scientists explaining "what's happening" and

what we can now do about it.

And working together as a team does not guarantee success. The "we-can-beat-anything-if-we-only-pitch-in-together" mentality is forever destroyed. Some things, the film posits, are unbeatable. Worse yet, the authorities are not only ignorant and helpless, they are as dangerous as the zombies. In the end, the marauding posse has become a different kind of zombie.

Like *2001, Night of the Living Dead* also uses TV in a new way. There are improvised scenes of reporters traveling with zombie-hunters, and reports from Washington trying to soothe the populace. TV was bringing the numbing horror of Vietnam into America's living room. Romero's film mirrors that horror.

John Carpenter, one of the more notable filmmakers influenced by Romero, calls him "one of the most influential filmmakers of the last two decades." Carpenter cites the documentary feel of Romero's black-and-white photography and handheld camera. Also, the graphic violence, Carpenter said, "started an entire trend." Phil Hardy calls it "one of the most influential science-fiction films."

It's not hard to take Romero's film as a metaphor. There was a considerable number of middle-class, middle-aged Americans who thought that 1968, with its long-haired, free-love, rock-n-roll, revolutionary freaks was their worst nightmare come true.

Romero would continue this examination — who is human, and who is monster — well into the '70s, when the hippies had given way to the yuppies and nobody cared too much about "what's happening" as long as they could make the mortgage payment. Romero's "Dead" trilogy — *Night*, *Dawn of the Dead* (a black comedy

satirizing American consumerism), and *Day of the Dead* (his darkest film) — is nothing less than his musings on humanity lost.

If ever there was a film that was a counterpoint to the transcendent airiness of *2001*, it must have been *Night of the Living Dead*. One played showcase, reserved-seat bookings, while the other found its way to drive-ins and decrepit college town cinemas. Nonetheless, both films are of the same substance. Both question mankind's humanity and scientific competence. Both mirror their era even more than the SF films of the '50s mirrored theirs. And both picture humans clearly at the mercy, the whim of superior and unknowable forces.

Romero worked as a gofer on Hitchcock's *North by Northwest* (and was unimpressed by Hollywood-style moviemaking). Romero came to the film *Night of the Living Dead* with a background of extensive commercial work in Pittsburgh. The grittiness and the quick, handheld camera work give the film an immediacy that simply had not been seen before.

Romero had formed a consortium of backers/producers/partners (Image Ten) to make *Night of the Living Dead*. (He ended up directing the film because no one else in Image Ten really wanted to.) It set the pattern for his 20 years of independent film making. Image Ten also provided a model for filmmakers like Stephen Spielberg and George Lucas, as well as dozens of regional and low-budget filmmakers.

The effects of *Night of the Living Dead* were the result of Derma Wax (for the wounds) and Bosco Chocolate syrup for the copious amounts of blood. A Revell plastic model of the human skull was also used. These visceral effects inspired a future gener-

ation of make-up magicians. The whole field of cinematic prosthetics and effects, ranging from exploding heads to chest-bursters, is the result of Romero's homegrown splatter. Few horror films have explored the themes raised by Romero's army of living dead.

A few other films well worth seeking out are listed below.

The Time Machine (Galaxy Films/MGM, color, 1960, 103 min.) is an entertaining, if shallow, film from George Pal. It's notable for its wonderful time-travel scenes.

Village of the Damned (MGM, b&w, 1960, 77 min.) is the best adaptation of a John Wyndham novel, and a worthy aliens-among-us film in the '50s mold. This time they are our children.

Fahrenheit 451 (Anglo Enterprises/Rank/Vineyard, color, 1966, 112 min.) and *Alphaville* (Chaumiane, color, 1965, 98 min.) are two films by French auteur directors (Truffaut and Godard respectively) that, while oddly uninvolved, create a definite sense of a future world.

Quatermass and the Pit (Hammer, color, 1967, 97 min.), also released as *5,000,000 Years to Earth*, a taut thriller about an unearthed object in London's Tube. It anticipates both *Alien* and *2001*.

The following are recommended sources for the films and books for further reading.

Criterion LaserDisc, which surely deserves an award at this point for their service to cinema, will be issuing *2001: A Space Odyssey* on LaserDisc in November 1988 (with commentary) in full, 70mm format.

George Romero has authorized a colorized *Night of the Living Dead*, partly to get his Image Ten collabora-

tors a piece of the \$30 million that the film has grossed so far. (The film lacked copyright information, letting it lapse into public domain.) The colorized version is available from Hal Roach Studios. For more information, contact: Video Treasurers, 87 Essex Street, Hackensack NJ 07601.

Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb is available from MCM/UA Home Video. *The Birds* is also an MCA Home Video release, available on videotape and LaserDisc.

Michel Ciment's book *Kubrick* (Hold Rinehart Winston, 1980) is all that a Kubrick fan could want: background essays, interviews with Kubrick, interviews with his associates, and sumptuous photographs. Best of all, it has recently been placed in the remainder stacks at many retail bookstores. Unfortunately, there is no interview devoted specifically to *2001*.

John Russell Taylor's *Hitch* (Berkley Publishing, 1980) is the approved biography, but Donald Spoto's *The Dark Side of Genius* (Little, Brown, 1983) gets to the heart of the master, especially in his obsessive latter years.

Paul R. Gagne's *The Zombies that Ate Pittsburgh* (Dodd, Mead, 1987) is a thoughtful, appreciative study of George Romero and his films.

Leslie Halliwell's *The Dead that Walk* (Grafton, U.K., 1986) is his own witty study of three classic cinematic horror themes, including the living dead phenomenon.

Twenty All Time Science Fiction Films by Von Gunden and Stock (Arlington House, 1982) and Danny Peary's *Guide for the Film Fanatic* (Fireside Books, 1986) are useful and entertaining sourcebooks, as is Phil Hardy's *Science Fiction Sourcebook* (William Morrow & Co., Inc., 1984).

THE TURF

by Sharon N. Farber
art: Roger Raupp



Sharon N. Farber informs us that there has been a major change in her life: after years of denying that she was a yuppie ("No way. I'm still just training for a profession. And I can't stand pasta salad or sushi."), she's finally been forced to admit the truth. The final straw was her recent purchase of a foreign car — well, okay, an '82 Toyota. But for her, it's the thought that counts.

I must have been grinning like a medical student who's just found a free meal.

"You look pleased," said the pediatrics intern, as I gloated over my consultation note. "Well, pleased as can be expected at one A.M."

I nodded. "That tubal pregnancy? More like acute appendicitis. I turfed it to Surgery."

The surgery resident walked by, yawning. I passed her the chart with a flourish. She did not seem excessively grateful. What can I say? Being on call every other night — thirty-six hours on, twelve off — seems to make some people a little surly.

But I was pleased with myself. It was a good, legitimate turf. Not like, say, the time I managed to get that crazy woman, the one who thought that CIA-laundered funds had been hidden inside her frontal lobes, transferred to Neurosurgery. No, this was an appropriate turf, the right thing to do for the patient, and most important, it might free me for a couple hours' sleep.

"Now me," said Peds, "I should be asleep. But no, I've got to see this kid who's been sneezing for a week. So why does mom bring him to the emergency room at midnight, instead of keeping her clinic appointment tomorrow? 'I'd just picked him up at Grandma's and happened to be driving past the hospital.' " He moaned, then scrawled his signature, saying emphatically, "This is an inappropriate use of the emergency room."

Tossing down the report, he stretched. "Maybe I can grab a nap before the next turkey case wanders in."

A nurse rushed over. "You won't believe this case!"

Peds and I exchanged glances. "Aw, you always say that. Like the woman who said poltergeists were nibbling her toes, and the man with the light bulb . . ."

"No, really!" She pointed in the direction from which she'd come. We followed her finger with our eyes.

A glittering green glob was inching its way in through the ambulance entrance, leaving little sparkles in its wake. The thing was about a meter in diameter, quivered like a bowl of underset lime jello, and smelled like old sweat socks in orange sauce.

"Greetings people of Earth, I come in peace."

Peds muttered, "Call Psych. I think I need some Haldol."

"Stand in line."

The nurse sidled up to the — whatever. "Are you . . . uh . . . may I help you?"

"Take me to your leader."

"Have you registered?"

Peds and I shouted in unison. "Don't make it register." We wanted to see what would happen next; it could be hours if they started asking about insurance policies.

"Take me to your leader?"

The nurse sighed. "Will you settle for the intern on call for Medicine? I'll beep him — as soon as we get your vital signs." With that she slapped a Tempadot between two of its (I think) eyes, and pointed to the scale.

Then they paged me to Labor and Delivery, so I never did find out how she checked the blood pressure.

By the time I'd delivered a 6-lb., 9-oz. girl and changed into a clean scrub suit, it was two A.M. I fell onto my call-room bed just as the ER summoned me to see a woman. "She's got contractions every two minutes, and ruptured membranes," a nurse shouted hysterically. Nothing makes an ER more upset than the thought that some inconsiderate pregnant woman might drop a slimy new baby all over the clean linoleum. I stumbled down to find the patient wasn't even pregnant, but had a discharge due to a trich infection, with symptoms for over two months. But there was nothing good on TV tonight, so she might as well go to the ER. Turf to the street.

While I was at the ER desk, writing out a prescription and inhaling my eighth cup of coffee that day, the psychiatry intern dropped into the seat beside me.

"Next time they wake me, it'd better be for something appropriate," he yawned, systematically scratching his hair and beard until he had a good solid static charge, and lint began to collect out of the air around him.

"Uhhh," I said. "At least you got to bed."

"Medicine decided that people from space must be my department. But hell, I'm a doctor. I did four years of medical school. I can turf with the best of them. Wanna know my plan?"

"Gnnh?"

"Go look in room 4. Go on."

It was next door to my patient, so after dropping off the prescription, I glanced into the cubicle. The strange creature was on the examining table, throbbing with a muted gray light. "*Greetings people of . . .*" it began hopefully. I returned to the desk, leaning all my weight on the counter. Psych had drunk my coffee while I was gone.

"You see it?" he said, continuing to scribble his consult. "Did you see that little whatsit on its side? Like a bleb or a pseudopod or something? I ask if they all had those, and it says 'no.'"

"'Was it always there?' I ask. 'No.' 'Has it been growing?' 'Yes.' Therefore it's a new, abnormal growth. So I'm giving the case to Surgery. Sharp move, huh?"

"Surgery's scrubbed on a ruptured appendix."

"If it wanted quick service, it shouldn't have come to an emergency room."

Then the floor nurse paged me to put in an IV she'd just pulled out.

After the IV, another delivery, and an unsuccessful hunt for clean scrubs, I

groped my way into the call room and fell onto the bed. My watch read 5:15; rounds started at 6. It hardly seemed worth the trouble of going to sleep, but I wasn't about to complain. Then the phone rang.

When I reached the ER, Peds and the nurse were at the desk, flipping through a chart. Seeing me, the nurse just snickered and pointed to room 4.

The glob was glowing less than before, or maybe it was just the sleep gumming up my eyes. "*Greetings people of Earth,*" it said in disheartened tones.

The surgeon was propping up the wall. She reached over and poked at the famous bleb on the thing's side. "See this? It's not a tumor. It's a baby. And they're both yours." Throwing the chart in my general direction, she left, laughing hysterically. I hoped Psych was somewhere nearby.

I collapsed onto the chair. "So. You're pregnant. Hi. I'm the obstetrics intern."

"*You are the leader?*"

"No. When's the baby due?"

"*Mitosis shall occur when the moment is propitious.*"

"Not soon, I hope. Hey, why'd you come here at this God-awful hour, anyway?"

"*I saw the lights.*"

"Great." I looked at the record. No one seemed to have gotten very far. I guess they all bogged down trying to spell its address. "How old are you?"

"*Twelve of your days ago I was created to . . .*"

"Twelve! Wait here." I was out to the desk, tossing the chart to the pediatrics intern. "It's all yours."

I ran into Peds later on, at lunch. By then I'd been working over thirty hours straight and was not about to win any prizes for swiftness.

"That patient you turfed to me?" Peds said.

"Mmmh?"

"You know: 'Greetings people of Earth.'"

"Oh yeah." I couldn't focus on the bologna casserole. Sleep deprivation does have its advantages.

"Well, it got tired of waiting. Said it had other planets to visit. I told it, 'Fine, out the door.' Didn't even have to turf."

I scratched my head. "D'you think we handled this right?"

Peds glared at me. "It was an inappropriate use of the emergency room."



JACOB'S ROCK
by Paul J. McAuley
art: Hank Jankus



Dr. McAuley has a doctorate in botany, and he holds a Bachelor of Science in botany and zoology. He currently works as a cell biologist at Oxford University.

His short stories have been published in Isaac Asimov's Science Fiction Magazine, The Magazine of Fantasy & Science Fiction, Interzone, and, of course, Amazing® Stories.

This particular story is a part of a series of stories that share a common future history. The other stories in this series that have appeared in our pages are "The Airs of Earth" (January 1986), "Among the Stones" (January 1987), "The Heirs of Earth" (May 1987), and "Little Ilya and Spider and Box" (March 1988).

The mining colony of Jacob's Rock did not look as if an insurrection had recently been quelled there. No damage to the refining machinery and cluster of tugs that hung above its docking complex, and no damage inside either; no bloodstains or scorch marks on the walls, no daubed slogans . . . in fact, nothing but a single prisoner. Guilherme Strasser, the foreman of the Rock, was not forthcoming as he escorted Guild Captain Elena Mendana and the family representative to his suite, nor had he been during the exchange of messages as Elena's ship had driven in from its breakout point. There had been an attempted insurrection, she had been told, and it had been dealt with. There was no problem.

Yet something was wrong: Elena was sure of it. She could sense the ineluctable black scent of trouble, but could not identify its source. Perhaps it was no more than her immediate dislike of Strasser, a burly unctuous man who kept touching her arm, unwelcome solicitous pats, as he gave her a drink and guided her to a monstrous overstuffed couch that promptly and unwantedly began to massage the small of her back.

"Welcome to Sirius, Captain," Strasser said. "For someone who's never done this run before, you did a nice job of matching our spin."

Elena bridled. It might have been a compliment if she had been the usual rookie proving her sigil on the long haul, but she had almost twenty years' service with the Guild, and she was sure that Strasser knew it and why she had been demoted. He would make it his business to know. "Don't give me any run-around," she said. "Just tell me what has been going on."

Strasser raised a bushy eyebrow. He was a hairy man: a black tangled mane brushing his broad shoulders, thick black curls fleecing his forearms and the vee of his chest visible within his unlaced coveralls. "It's all under control. Don't you worry. Tell her, Seyour Menge-Martin."

On another couch, beneath a huge full-length portrait of a woman in

ancient costume (surely a fake) the family representative smiled broadly. The ritual scars on his plump cheeks flexed like little mouths. "Guilherme is a good man, Captain. Don't mind his manner. Our best foreman."

Elena said, "I still have to know what has been happening."

"The Guild gets its fee, so don't worry."

"I'm sure it's all under control."

Strasser and the representative, Kinta Menge-Martin, had spoken simultaneously. Elena looked from one to the other. Men, their cold closed faces, amusement at her presumption just beneath the skin. "I have to know," she said. "In case it endangers the ship." It sounded weak.

"It is all over," Strasser insisted. "Contained, finished. A few hotheads, and fortunately they had no backing." He looked at Menge-Martin. "The astronomer was behind it."

The representative shrugged. "The family was against that, but the Federation insisted. What can you do?"

"And her pilot," Strasser added, "and my assistant engineer. A couple of others. All dead but the pilot, and *he* won't be any good to anyone. Someone out to discredit the family, or maybe a hit-and-run job to get the orthidium. It was all refined by then. But it is over. Your ship, Captain, is safe."

"You've done well," Menge-Martin told Strasser, then he turned his bland smile on Elena. "You see, dear Captain. This man is a jewel. My family chooses its men well."

"But still, there was trouble. You don't seem concerned." The portrait was of a woman in a long white dress; treading a white bear-skin, she gazed serenely above Menge-Martin's insincere smile.

"Ah, dear Captain," he said smoothly, "I trust Seyour Strasser." Everything about him was smooth: his polished brown pate, fashionably depilated; his gleaming silk coveralls; his broad purplish manicured nails. Elena thought him a fool, vain and stupidly complacent. He had married into the Martin family, and the members had given him this job as a sinecure. He thought that he was good at it, and important, but he was neither. Strasser ran the Rock, and Elena, the ship. Menge-Martin's job was purely heraldic.

Elena turned from him and asked Strasser, "You said there was a prisoner — could I see him? I suppose he will be returning on my ship."

"I haven't decided about that."

"Surely, he will have to be tried."

"I make the laws here. Within the limits the family sets, of course."

"Oh, do what you want in this matter," Menge-Martin said languidly.

"I'd still like to see him," Elena said.

"Well, why not? But I'm afraid that he won't tell you much." Strasser crossed the huge room and pulled out an elaborate panel, all gold leaf and inlaid semiprecious stones. He conferred briefly with someone on the other end, but the speaker was directional, and Elena couldn't hear what was said. Menge-Martin was smiling at her, and she looked away, at the portrait, at

the rough rock walls hung here and there with sumptuous tapestries, at the pool of vivid blue water, bordered with ferns and dwarf palms, visible through an arch. Strasser had his kingdom here all right.

Menge-Martin had seen her look at the portrait above him and said, "Whistler's *The White Girl*. You like it?"

"It's a good reproduction," Elena said carefully.

"Oh, it's real, Captain, no reproduction." He smiled. "My family rewards good work." *And look what the Guild has done to you*, his smirk implied.

On the other side of the room, Strasser folded away the panel and said, "He'll be brought here directly. In the meantime, here are the loading invoices." He crossed back to Elena's couch, held out a data cube. "Point ought eight five three six eight grams of orthidium, five hundred-odd kilos of various fissiles, a quarter tonne of unrefined antibiotics, twenty-seven passengers. Twelve, first-class; the rest, hard-class."

Elena took the cube. It was faintly warm. "Antibiotics?"

"From the jungle."

"You see," Menge-Martin said, "the Rock is entirely self-sufficient. The jungle is at the bottom of the ecology, recycling carbon dioxide and waste water. The antibiotics are a by-product. The family doesn't like waste."

"That's all you need to worry about," Strasser said. "Your cargo."

"I hope so," Elena told him.

He smiled. "You will see." He crossed to the door, opened it.

Two men hauled in a third. His arms were bound behind his back. His head lolled; carroty hair bushed around a bandage.

"He was running away, out in vacuum, after my engineer was killed," Strasser said. "They were trying to sabotage the refinery. Well, we surprised them and they ran. We hit the engineer's sled, and his suit was holed. But this one would have escaped us entirely if he hadn't gotten too close to the light chromatography fields. Induction shot his cerebral cortex to hell." Strasser lifted the man's lolling chin with a hairy hand. "How are you today, Seyour Arrellano?"

"I — I —" The man was trying to focus on Elena, his eyes crossing with effort. Drool glistened on his chin. "Don't listen, I —" Then he went into a spasm, a dark stain spreading from his crotch.

"Burned out," Strasser said calmly. He guestured to the guards, and they began to haul out the still-twitching prisoner.

Elena watched him go.

"Well," Menge-Martin said. "There is nothing to worry about, it seems. You did well, Guilherme."

Elena felt a spasm of anger at the representative's smug complacent obliviousness. Strasser was hiding something, she was sure. Everything was too neat, too pat — nothing to grasp but what Strasser told them. She wondered if there had been any sort of insurrection here at all. But if not, what kind of

trouble was Strasser trying to hide? She said, "I should return to my ship."

"Don't forget to take your bodyguards," Strasser said, following her as she crossed the huge room. "You can see that we don't need them here."

Elena shouldered past without replying. In the antechamber, she told the quartet of stewards she'd brought with her, in the expectation of who knew what trouble, to return. "Tell First Officer Arshenko I'll be back in about an hour. I want to look around."

But once she was out on the terraced walkway overlooking the glittering Galleria, Elena began to wonder exactly what she could do. She walked slowly, watching elevators rise and fall in the cluster of glass tubes that, ringed at intervals with lush vegetation, pierced the center of the oval cavern. The terraced levels on either side held the apartments of the scientists and technicians and pilots and specialists of the Rock, as well as the restaurants, gaming houses, sensoria parlors, bars, and shops (mostly selling entertainment equipment) that serviced their needs. She wouldn't find anything here, that much she knew. In any enclosed society, Rock or ship, rumor ferments at the lowest levels, just as everything in a jungle eventually passes through the muck of its floor.

So she passed by the huge maws of the main avenues and took a narrow passage that led down toward the service warren. The lighting here came from widely spaced glotubes; the walls were naked rock, freezing to the touch and sweating with condensation that collected in a central gutter, its stream running against the gentle slope. For as Elena descended, the gravity grew less, from the Earth-normal pull of the Galleria to the languorous floating sensation of about lunar level in the warren. The few people she passed were mechanics or servo-mechs or laborers, and all glanced at her Guild uniform coveralls and the sigil which glittered above her right breast. Well, she couldn't do anything about the coveralls, but when she reached a likely looking bar, she unfastened the sigil and stowed it away before entering.

It was a long low-ceilinged room, ill-lit, its floor, benches, and walls all covered in the same rough, matte-black material so she couldn't quite see where the plane of the floor turned into the curve of a wall or the shelf of a bench. There were only about a dozen people there. All turned to look at Elena, and almost all deliberately turned away, hunching over their drinks like bats. Elena went up to the counter and asked, "What can I have?"

The fat bartender leered. His left leg, Elena saw when she leaned at the counter, had been replaced with a mechanical contraption that ended in gripping claws. "Whatever you want, Guild. I'm honored, I'm sure. The Galleria not up to your expectations?"

"I'm just looking for a quiet drink."

A slurred voice said, "Aren't we all, darlin'?" He was a tall, bare-chested man, his ragged trews belted with a double loop of wire. He pressed an arm around Elena, then stepped back quickly and laughed at his bravado. "Get

her a grosha beer, Mike. I'll pay."

Elena slapped the counter with the handful of scrip she'd drawn before leaving the ship. "I'll buy my own. And I'll buy one for you, and the bartender there, for company."

"Hell," the tall man said, "I don't need Guild to buy me drinks." He slid off around the counter, heading towards the arched door. "I'd sooner drink at the bottom of the well."

The bartender drew two beers, pushed one to Elena. "First time I've ever seen that guy refuse a drink. He's a company rummy."

"But you aren't as particular. No offense."

"Running a place like this, you drink with anyone. No offense."

Elena smiled, then asked what the bottom of the well was.

"The Galleria. See, because of the spin, it's like entering a gravity well when you go up there. Like when you land a ship. I prefer it down here, plenty of rock between me and the vacuum."

"And a company rummy?"

"Someone who drinks his draw. That one's been on the Rock since it was spun, near enough. Headed for the jungle next renewal, I judge, unless he takes the long drop first. We push our corpses out, see, with just enough velocity so they eventually hit Sirius B."

Elena sipped her beer. The mild hallucinogenic bubbled on her tongue, and the dark shapes of the bar seemed to acquire faint polychromatic edges. "I hear a couple of people have taken that trip recently."

The bartender shrugged.

"Come on. Wasn't there an attempt at revolution here?"

"Why do you want to find out, Captain?"

"How did you know?"

"Things get around, and most things get around to someone behind a bar. Listen, it's all finished now. Strasser has things tight. Production levels are good, so there'll be bonuses all around. Everyone's happy."

"But people died, just the same."

"Yeah, well, you won't see Strasser mourning them. That astronomer was like metal filings under his skin, and Hannibal was always on his case about the refinery using too much juice, and, of course, Strasser doesn't want to shut it down unless some major glitch blows it."

"Hannibal?"

"Hannibal Jones. The assistant engineer. Or was."

Elena thought it over. "What about the others?"

The wrong question. She could see the shutters sliding down behind the man's eyes. "There weren't any others, Captain. Just that astronomer, her pilot, and Hannibal. You ask Strasser if you want to find out about it. I've got a bar to run." He stumped around the curve of the counter, his prostheses whirring.

As Elena left the bar, a little rabbit of a man brushed past her on his way

in. The glotubes pricked at her eyes. She fumbled for her sigil in her pouch pocket and came up with something else.

A data cube.

Not the sealed one Strasser had given her — that was tucked away inside her coveralls. This was a cheap kilobit cube, its chrome terminal filmed by much handling. Elena glanced around at the deserted intersection, then stepped around the corner so that she could watch the bar entrance.

Not quite five minutes later the little man who'd pushed past her shot out of the hole and scurried away. Elena caught up with him easily, shoved him into a deep recess. He goggled at her, white-faced.

"Why did you give me this?"

He squinted at the data cube. His eyes were a washed-out blue, set close together over a small, cleft-tipped nose. "What?" he said. "Listen, Seyoura, I don't know —"

"Come on." Elena pushed him deeper into the dark recess. A fan labored behind a high grill; freezing water dripped on her shoulder. "Your friend went out and told you I was here — the rummy, am I right? And you waited until I left so you could drop this in my pocket. What is it?"

"Plug it in and see. I was just asked to give it to you, Captain."

"You know more than that." The beer buzzed in her head, overriding her usual methodical caution. She scented the blood of this little rabbit, wanted to see him squirm, hear his squeal.

"Captain, I promised —" He winced as she ground the bones of his thin wrists.

"I can do a lot more," Elena told him.

She got the story out of him in bits and pieces. His name was Luis Baudero, and he had been a mining-tug pilot until, out amongst the Trojan asteroids that orbited the L5 point between Sirius A and B, his partner had gone crazy. "Tried to strangle me with his bare hands. I only meant to knock him out, but he got a concussion and died on me," Baudero explained. He didn't look like he could have killed anyone, squirming in the dank dimness in Elena's grip. "Strasser demoted me to an angel, sent me to the jungle, for that."

"Without a hearing?"

"Strasser runs this Rock. Put me in the jungle, told me I was lucky he didn't kick me bare-assed into vacuum. Might as well have revoked my return ticket. You know about the jungle? Up at the axis, Captain, no gee or nearly so. Twelve-hour shifts in that, you soon weaken. Bones go soft, muscles atrophy, heart enlarges. Makes you a cripple in six months, Captain, and I've a year to go. I want out of here bad, and I want Strasser seen to as well. I admit I ain't got pure motives for helping her, but I'm helping."

"Her? Who?"

"Lee Hamilton. The astronomer. No, she isn't dead. Strasser just wants people to think that. Him and his cabal are hunting her down, but she's safe.

She needs your help to get off. Plug in the cube. She'll tell you."

"So there wasn't an insurrection."

"Hell no. Since she and her pilot found out what he's up to, Strasser wants her dead. She wants to meet you, Captain, tonight, in the jungle. Talk to her then." He made to push past, but Elena easily held him. Weak, yes, that much was true. "Come on," he said uncomfortably.

"You surely don't expect me to make a rendezvous like that, do you? You can take me to her."

"Christ, Captain. That's too dangerous. I —"

"If you want off, you take me to her. I'm not walking into the unknown without cover. Otherwise I'll just take this cube to Strasser." Some lucid part of her mind, detached and cool behind the sensory blur of the beer, thought that she was crazy to believe anything this freespacer said. But the beer made her bold. "Is that a deal?"

"Okay, okay. But tonight. Meet you right outside the bar here. Twenty-two hundred." Then he was gone.

Elena was hanging in the zero gee of the huge, cold chamber of the lock complex, waiting for a gig to ferry her to the ship (to make docking easier, the locks were at the axis of spin), when Strasser found her. She saw him shoot out of the circular maw of the *Avenida das Estréllas* like a black unruly comet, swarming towards her over the web that covered the walls, moving with fluid grace, moving fast.

"Goddammit, Captain!" he yelled when he was close enough. "Don't you go poking around in something that's none of your business!" A couple of laborers, maneuvering a pallet of coldcoffins in midair, goggled at him, and he waved a fist. "Get to your work! Go on!" He grabbed a line with one hand, sweat flying from his face, his black mane sticking out as if electrified, as he kicked out to kill his momentum. "What do you think you're up to, Captain?"

Elena faced him down, her heart pounding with the effort to remain calm. "What do you mean, Seyour Strasser?"

"What do I mean?" He thrust his face towards hers, less than half a meter away. "You went into the warren, asking questions, stirring up trouble."

Elena countered. "Were you having me followed?" She was wondering if Strasser knew about her meeting with the ex-pilot.

"The bartender told me. Don't push, Captain. It's a company affair, and that means it's down to me. Menge-Martin had told you I have the full confidence of the family. Believe it."

"I wouldn't dream of questioning your authority. But you seem to take such a serious affair very lightly."

Strasser slapped the wall with his free hand, bouncing away with the reaction and pulling himself back. "I've never had trouble with other Guild captains. You want I should file a complaint? This is outside your jurisdiction.

Stay with your ship, *Captain*." The scorn with which he forced out the last word betrayed his prejudice: like so many Greater Brazilians, he saw women only as property, as breeding stock. Commodities, not citizens.

Elena said calmly, "I hope that's not an order, Seyour Strasser."

"Call it a recommendation. Your gig's here. Attend to your affairs, and don't worry about mine." He turned and kicked expertly away, and he was halfway toward the *Avenida das Estréllas* before Elena had framed a reply. But at least she now knew that something really was wrong.

When Elena finally reached her ship, she found the first officer hanging around the cargo bay. He started on some long complaint that he had been waiting for her authorization to begin loading, that everything was held up. First Officer Arshenko was a fat, balding man. He was sweating under the bright lights of the bay, dark patches under the arms of his coveralls, rimming his too-tight collar. "I expected you back an hour ago," he complained. "All the crews are standing around."

"You don't need my signature to begin loading the passengers."

"We have to go by the book, Captain. Remember standing orders. The orthidium comes aboard before anything else. For that we have to jointly log the invoices. You have them?"

"Oh, hell," Elena said, suddenly weary. The bright edge the beer had laid on her senses was quite gone, burned away during her encounter with Strasser. She pulled out the sealed data cube from her inside pocket and remembered the one the little ex-pilot had given her. "Let's get this over," she told the first officer. She noticed that Arshenko allowed himself a slight, sly smile as he stood beside her at the cargo-bay terminal and went through the ritual of logging the invoices. No doubt pleased, Elena thought, to have caught her out, one point racked up for him in the complicated dominance games he played. Little love was lost between Arshenko and herself. When she had taken command, she had put a stop to various irregularities in the day-to-day running of the ship, and some of them had been Arshenko's personal ways of sweetening the long haul. Unlike Elena, he was there purely through mediocrity. He'd been on it ten years. Of course, he knew all about Elena and her fall from grace, but he knew that as soon as she'd worked off the demerits she'd be back on the better freighter runs (but never again the prime passenger runs, the Guild would not allow that), and he resented her for it.

When the invoices were logged, he said, "Did something give you trouble? It's straightforward enough, I think."

"I took a look around, on the understanding that in dock I'm not needed for every little thing. I've never seen a mining station before."

"You'll soon see they're much the same. By your second run you'll never bother to leave the ship."

"Thank you for the benefit of your experience. Is Menge-Martin back yet?"

"I haven't noticed, Captain. Is there anything else?"

"Just let me know when the representative does return. That's all." The data cube Baudero had given her was burning in her pocket, and she hurried to her cabin, plugged it in, and . . .

. . . a tangled braid of light appeared. Then the holostage showed an unfocused view of a young woman in a dense bower of leaves, poised like a wild, wary animal. "Hold on," she said, leaned forward (her hand a bloated white blur), and adjusted something beneath the field of view. When she leaned back, she was in focus. Her hair was matted with twigs and dirt; more dirt was smeared on her face, on her torn suit liner. "Okay, captain of the long haul, this is for you. I'm Lee Hamilton, and I guess you can see that I'm not as dead as Strasser makes out. He killed poor Jones and captured my pilot and tortured him, but he hasn't caught up with me yet. But he's trying hard, and I need your help. Captain, Strasser is involved with about five others on the Rock in a scheme to extract orthidium from a previously unknown source. He's smuggling it out with the orthodox tared supply. I know the names of the people involved on the Rock, and I believe at least one person on your ship is involved, too, though I don't know who. Be careful. If you don't believe me, survey this area —" She reeled off a string of coordinates. "You'll understand then. I'll be waiting for you in the jungle tonight. Go in at port seven; there, I'll find you." She reached forward again. A tangled braid of light . . .

Elena played it through again, this time noting down the coordinates, then switched off the holo and sat back, looking around at her bleak little cabin as if for the first time. Almost nothing in it was hers. This time she had forsaken the usual clutter she took with her on voyages: she had refused to make her mark on this, her exile, and had stripped herself to her essence. Everything she was, was the Guild. But this was nothing she could play by its rules. She was on her own.

Well, look what going by the rules had gotten her: the most unwanted intersystems command the Guild could offer. She switched on the holo again and instructed the computer.

She was rewarded with a segment of raging white rim that threw her shadow across the cabin. "Sirius A," the computer said. She asked for a shielded view, and the rim was occluded by a dark filter. Tenuous promontories, flames that could engulf the Earth in an instant, slowly, ceaselessly writhed. In their center was a glowing dot, white in the filmy white fire.

Elena asked for an analysis. After a moment the computer told her, "Spectral spread indicates a fusion flame, and flow vectors in the corona suggest that particles are being channeled into that spot."

"A ramscoop! But don't they need to operate at a considerable fraction of light speed?" She knew of ramscoops only through history: hundreds of years ago, before the discovery of contraspace and the phase grapple, Russia and the United States of America had colonised half a dozen systems using

colony boats powered by ramscoop fusion drives.

The computer said, "In order to operate efficiently, that is correct. Particles are entering at about half the required velocity, but it should be noted that particle density is several orders of magnitude higher than in interstellar space."

"That goes without saying. Is there anything else?"

"Yes. As Sirius A rotates, the device remains in a direct line between it and Sirius B. Orbital analysis indicates that most of the power expended by the device is being used to prevent it from falling into the primary."

"Show me Sirius B."

The view faded to a starscape, one feeble point bracketed. Elena asked for full magnification, but the computer could give her no more than a blurred circle of pure light. But however insignificant its appearance, Sirius B was the reason for Jacob's Rock. When it had begun its slide off the scale of the Hertzsprung-Russell diagram, swelling in the initial stage of its metamorphosis into a white dwarf, the star had thrown off shell after shell of material, and some had touched and clung to the asteroids that attended its dance around Sirius A. A residue that included the charged quasi-nuclei, conglomerations of quarks, used as a modifier in the catalfission batteries which powered everything from pin lights to phase graffles. Orthidium. No other place to get it until someone worked out how to mine the very cores of stars. So what was a ramscoop collecting in the corona of Sirius A? Nothing there but hydrogen leavened with elements lighter than iron.

Elena studied the blurred, enigmatic disc for a while, and then thought to ask the computer, "Where are you getting this from?"

"I'm patched into the comm net of Jacob's Rock. The views are taken from navigation drones. I have no way to compensate for the ship's present rotation."

"That's what I thought," Elena said and switched off the holo.

She stripped off her coveralls and spent a long time in the shower, letting hammering needles of water scour away all thought. Presently, the sound of the intercom signal came to her through the noise of the shower. Naked, she padded into the cabin and switched for sound only.

First Officer Arshenko's voice said, "Seyour Menge-Martin is back. You wanted to know."

"Good. When are we due to depart?"

"A shade under twenty hours. Loading and unloading is on schedule."

"I want a hold on departure. Twenty-four hours."

"Captain?"

"Our schedule will take it. A little R&R for the crew won't do any harm. I understand they don't get the chance to go planetside at Procyon."

"Of course. But it is irregular, Captain."

Was he the one? Elena said, "You have the right to enter a formal objection."

"That's not necessary, Captain. Not as you order it. I had better have the stewards inform our first-class passengers. They'll be upset."

Bastard, Elena thought. She was on the long haul because she had had trouble with a first-class passenger on her previous command, as Arshenko doubtlessly knew. She ran her hands over her short, wet hair, then told the first officer, "I'm sure you can deal with their complaints. Just log the change."

Then she dressed and went to look for Menge-Martin. Her conscience and her duty required that she tell him what she had learnt, even though she was pretty sure he wouldn't be any help.

When Elena had finished telling him as much as she knew, Menge-Martin said, "This is all quite alarming, Captain. But apart from the ravings of that woman, what hard proof do you have?"

"That's why I want to bring her aboard."

Menge-Martin permitted himself a small smile. "It is your ship, Captain. I am simply a passenger." He sipped from a tall thin glass of green liqueur. A similar glass sat untouched on the little pullout shelf beside Elena's elbow. Menge-Martin's cabin was as small as her own, and the clutter and floating drapery he'd installed made it as intimate as a tent. His scarified face was only a handspan from her own.

"But the Rock is your family's. I need your permission."

"Then you have it, of course."

"I don't suppose you'll help in a more concrete way?"

"Ah." Menge-Martin sipped. "You see, Captain, I have this position because I married into the family. It is the least position in the higher tiers of the family's concerns. I am grateful, of course, but I am not so grateful that I am willing to risk my life in the course of my duty. If you understand."

"Oh, I understand."

"Please, Captain. I am not a man of action in any event. I could be of no use to you in that respect. But here —" He jumped up, knocking Elena's elbow, and began to rummage in a small, exquisitely inlaid chest. "I probably shouldn't show this to you because I shouldn't have brought it aboard. But you shall have it. Here."

It was a sonic 'caster. A pinpoint ruby glowed in the carved gold case, indicating that it carried a full charge. Elena took it reluctantly and was surprised at its weight. The case really *was* made of gold.

"Please," Menge-Martin insisted. "If you are right about Seyour Strasser — and it is so very hard to believe after all the years he has served the family — *if* you are right, you must keep it."

Elena juggled the heavy little thing in her palm. Menge-Martin had broken more than a dozen regulations bringing it onto the ship, but she couldn't check anything out of the armory without the risk of alerting the turncoat in her crew. Especially if that turncoat was First Officer Arshenko.

"All right," she said. "Thank you. But I'll give it back, when this is all over, after we reach port at Procyon."

Menge-Martin smiled. "You are a credit to the Guild, Captain. I will try to secure you a more amenable position, once this is all over. Ah yes, my family has influence in the Guild. Now, good luck. I eagerly await your return."

"I'm sure. Well . . . thank you."

Menge-Martin widened his smile. She would remember that smile, later.

Like the ship, Jacob's Rock kept to the diurnal rhythms of distant Earth. It was after twenty hundred, and the recessed lighting had been turned down to a twilight glow when Guild Captain Elena Mendana passed the guards Strasser had posted in the lock complex (she thought she could guess why: well, she had Menge-Martin on her side now, so let him try to scare her off), and pulled herself into the long stairway of the *Avenida das Estrêlas*. The same twilight glow illuminated the Galleria. People sat in the terrace cafés and restaurants or strolled wide walkways, looking at the brightly lit shop windows. Elena could almost believe she was planetside, not upside down beneath the skin of a forsaken rock whirling in the wake of a white dwarf star.

The illusion was wiped away when she entered the service warren. There, glotubes shone as harshly as ever, naked rock sweated, and workpeople in grey coveralls were changing shifts. Elena consulted the map the ship's computer had printed for her, and turned down a narrow shaftway, taking long strides in the low gravity, her weight decreasing with every step she took. She had business to do before she made her rendezvous with Luis Baudero.

The map led her across a huge cavern where glotubes hung high above, remote as stars, their light, softened by haloes of mist, glistening on the carapaces of hulking machinery. No one stopped her: she saw no one. A long low tunnel descended to a cold rocky chamber. There was no gravity there; she was at the axis.

There was a single guard at the round, barred entrance to what were quaintly called the correctional facilities, a woman sleeping curled in mid-air, tethered to a bolt fixed in the rock wall. Elena gave her a light dose with Menge-Martin's 'caster, enough to keep her unconscious for an hour or so, and stole the key. The lock buzzed and she was inside.

There were half a dozen cells carved into the rock; only one was occupied. The pilot stirred in his restraints when Elena entered. There was barely room for both of them, and she wrinkled her nose at the stink as she bent toward the man's restlessly shifting head. Eyes rolling white in the gloom, he spluttered, "Hands, hands, g-get hands."

After a moment Elena understood, and she untied the straps which held his hands behind him. He groaned and stretched, then reached out and

plucked one of Elena's pens from her pocket and began to write on the knee of her coveralls.

CAN'T TALK. CONDITIONED.

"How?"

HYPÆDIA. FULL SETTING.

"What happened here? What is Strasser hiding?"

The pen pressed her knee, then the pilot gagged and spasmed, his arms flailing. A fingernail ripped Elena's cheek, and she pushed back, banging her head on the curved ceiling. The pilot was arched like a bow, making strangled sounds. Elena reached into his mouth to check that he hadn't swallowed his tongue, and held him. After a while he relaxed into snoring sleep, and she retied him before examining her knee.

The first letter was an O, the second probably an r, tailing off when the seizure had hit him. But it was enough. It took her a long time to find her pen — small objects can be annoyingly elusive in zero gee — then she relocked both doors and left the guard to sleep it off. She had an appointment to keep.

"Christ, I didn't think you were going to make it," Luis Baudero said, his nose wrinkling nervously as he hopped and skipped to keep pace with Elena. "We go right here. What happened to your face?"

Elena dabbed at her cheek, looked at the smudge of blood on her fingertips. "I went to see Hamilton's pilot. He had a fit."

"Arrellano? How did you fix that? Strasser has him locked up tighter than the orthidium."

"There was only one guard. I had no trouble."

Baudero scratched his head. "Maybe Strasser pulled them off; he's making a serious attempt to catch Lee. Anyway, Arrellano can't help you; Strasser had him fixed."

"So I discovered. But he told me enough to make me believe your story. When he had his seizure, he was trying to tell me about orthidium. Since Strasser captured him before my ship arrived here, it means your story is not simply something you concocted with Hamilton to get yourselves out of trouble."

"Of course it's true!" Baudero clutched at the greasy black ringlets of his hair. "You'd better believe it's true, Captain. If Strasser finds you going into the jungle, he won't stop to ask you why. He knows Lee is hiding in there; it's the only place to hide."

"Then why hasn't he caught her? He strikes me as an efficient man, in his way."

"He is. But the jungle is something else. Ten cubic clicks under fractional gravity, all of it wilderness, maybe a hundred ways in and out. Besides, she has help."

"And she also needs mine?"

"She's been helped by the angels, Captain. They have the jungle, but they've been too long in it to be able to leave. Come on."

Baudero led her down a tunnel of cold rough rock. Their weight lessened until they could pull themselves hand over hand using a guideline stapled to the wall. And then the way ahead was suffused with a buttery glow.

"Okay," Baudero said, "this is where you go on alone. I'll wait at the entrance here, just in case."

"But how do I find this woman?"

"Oh, you'll see." Baudero's grin was weak, but it was there. It occurred to Elena that he was almost paralysed with fear, yet she felt almost nothing. Even her anger at Strasser had died back. Beyond the comfortable limits of the Guild, she was a *tabula rasa* awaiting a text to which she could respond.

"Go on, Captain," Baudero said. "She's waiting."

The glow expanded to a circle of warm yellow. Moist heat and a rich compound stink of decay slapped Elena's face when she reached the rim at the tunnel's end.

And stopped.

A long time ago, in the same history course where she had learnt about ramscoops, Elena had come across an ancient print encapsulating an otherwise forgotten pre-spaceflight cosmology. It had shown a robed man, some kind of monk, kneeling at the rim of the known world, peering through a break in the sky (bearing the sun and moon and a freight of stars) at the circles and spheres and cogged wheels of the mechanism which drove the universe. She had forgotten that print, until now.

The tunnel ended halfway up a rocky cliff that plugged one end of the enormous chamber perhaps half a klick in diameter. A long line of light ran down the middle air, a plasma tube floating at the exact center of the rock's axis of rotation. It stretched away from Elena like a perfect exercise in parallax, the other end lost in misty distance. Below her, vivid green treetops crowded together as they climbed the great curve on either side, meeting high overhead.

Elena floatingly clung to the rim. It was as if the universe had been turned inside out: all outside the sustaining mechanism for this, the true center.

Then a movement below caught her attention. The rock face was crisscrossed with creepers and lianas running every which way. Something was swinging rapidly up this web, a small monkey. It overshot the tunnel's rim and caught a trailing creeper with its tail, hanging upside down above Elena (but when she turned to look at it, the coordinates of the universe rotated, too, and suddenly the monkey seemed to be clinging to a vine above a sheer drop to the jungle canopy). The monkey returned her gaze with liquid brown eyes and said, the word blurred but distinct, "Come."

At her back, Baudero said, "It's all right, Captain. Go on, now."

The monkey kept glancing over its shoulder as Elena followed it unhandily along the web of the canopy, leaves in her mouth, in her eyes, in her hair.

The minimal gravity now clutching at her irrationally reinforced her fear of falling; she flinched from glimpses of a dark spongy floor as she was led along wide mossy branches drenched in leaves and light. She was grateful enough when the monkey said, "Stay. Wait." Then it was gone.

Elena crouched on a smooth-skinned branch, in a little clearing the size of her cabin back on ship. The leaves here were stiff and broad, glistening roughly. She ran a finger over one, tasted. Salt.

"Just stay still, okay?"

Elena froze, her fingers still touching her lips. She felt a hand patting her pockets, felt the 'caster being withdrawn. Someone moved back. "Okay," the voice said. Elena turned.

The woman, Lee Hamilton, said, "So Baudero got you here. I didn't think he could. I guess you want to know what's been going on."

"It would help."

"Let me ask: why? It isn't the Guild's business."

"Not exactly," Elena admitted. "But we are carriers for the owners of Jacob's Rock. And let's say I've formed an unfavorable opinion of Seyour Strasser."

"Join the club." Hamilton pushed long greasy hair from her face. Her feet were bare; one toenail was broken off. There was a starved yet determined look about her, a grim set to her narrow jaw. "I guess you want to know where Strasser is getting his orthidium. You know much about binary systems? Systems involving white dwarfs?"

"Maths, mostly."

"Well, look this up if you don't believe me. When Sirius B turned white dwarf, it shed a lot of matter, some of it orthidium. A portion collected on the asteroids at the Trojan points. That's why we're here. But an awful lot fell into Sirius A. That's a big star, a lot of pull. We know this because its absorption spectrum shows a lot of heavy-metal lines that shouldn't be there. So orthidium must have fallen in, too, and theory says it should have fallen through to the core. Well, it didn't. I came here to measure the solar wind of Sirius A, to see how much crosses from its Roche lobe to that of Sirius B. If enough falls into the white dwarf, it will go nova and eventually blow off the accumulated material. The shock waves would set off Sirius A. There's a system where that happened. Stein 2051."

"I've been there," Elena said. "On an exploration party two years after I joined the Guild. We were looking for orthidium. But there weren't even any asteroids."

"No. A nova is a lot more catastrophic than a normal collapse. It would affect Sol system if it happened here."

"And is it going to happen?"

"What? Oh, no. The flux is too small." Hamilton shifted the 'caster from one hand to the other. "But that wasn't all I found."

"The ramscoop."

"You had it analysed. Good. Yes, the ramscoop. Sitting in the corona, right where it is distorted by the tides caused by Sirius B. That's the secret, you see. Light pressure in Sirius A stopped the captured orthidium from falling in too far, and the pull of Sirius B stirs the outer layers like a spoon. The ramscoop collects the traces of orthidium that are ejected. When Joao and I were measuring Sirius A's solar wind, we found the ramscoop by accident, and then we had an accident of our own. I think Strasser was worried we'd stumble onto his secret, so he jiggered the drive of our ship. But we survived and we got back. And when we tried to enlist some of the miners, to protect ourselves more than anything else, Strasser went after us. He only has a few men, but he was effective. The assistant engineer believed us — he already suspected something — and he was killed when he was looking for evidence that Strasser was using the light chromatography refinery to process the contraband orthidium. And Strasser captured Joao, did something to his head. He didn't kill him because he hopes I'll attempt a rescue." Lee Hamilton's blue gaze was steady and clear. "Much as I want to, and I can't do that."

"You'll be under Guild jurisdiction on the ship. You'll be safe."

"It will have to be done secretly, Captain. And thank you. But if Strasser knows I'm on your ship, I believe he'll try to destroy it."

"A Guild ship? He wouldn't dare."

"What would he have to lose? This is his Rock, Captain. No one would dare stop him, and he would have enough time to escape. I tell you this because I want you to know the risks before you offer any help."

"I'll help. You have an idea?"

"I've had little else to think about. Strasser is watching the lock complex and the gigs, of course, but if I can get out onto the surface through one of the auxiliary locks, one of your ship's gigs could pick me up. I'll need a pressure suit, though, and I can't get at the stores here."

"I'll get one in, somehow. But what I'd like to know is how Strasser is processing the orthidium. Surely, he can't have subverted the refinery computers?"

"That's what Jones, the engineer, was trying to find out. I don't think he's using the refinery, if only because none of his men work there. And I don't know how he collects the stuff sent by the ramscoop without traffic control registering it. There are —"

The monkey flew into the bower, climbing Hamilton's back and tugging at one of her ears. "Go now!" it said thickly. "Go!"

"Strasser's search party, I guess," Hamilton said and casually tossed the 'caster to Elena. "Show the captain back," she told the monkey, parted the leaves behind her as if they were a curtain, and was gone.

The monkey darted away, and Elena followed as best she could, sweating in the humid stew of the air. Once they crouched together as someone thrashed past a few meters away; a hoarse male voice called, and another

answered from a distance. Then there was silence. Elena looked into the monkey's wrinkled face, and it showed its teeth in a parody of a grin. "Bad hunters," it said, and led her on over interlaced branches until the cliff which sealed this world loomed through leaves. Elena pulled herself hand over hand up a hairy creeper to the rim of the tunnel, and the monkey dived away, scarcely touching the web of creepers as it dwindled down the cliff, crashing through the green canopy, gone.

Elena pulled herself into the tunnel cautiously, called to Baudero. No answer but a faint echo, but she thought she saw him in the dim distance and went on. He was there all right.

Both arms were flung out, each hand pinned to the wall by the bolt from a piton-gun. His head lolled, his mouth gaping to show the bloody ruin where his tongue had been. Elena didn't need to touch him to know that, mercifully, he was dead.

Awkward in the fractional gravity, she fled.

The Galleria was almost deserted now; it was almost midnight, here as in Greater Brazil on Earth. Elena found a deserted automated café and used its terminal to page her ship, her fingers shaking so much from reaction that it took her three attempts. She wanted to make sure that a gig was waiting for her when she reached the lock complex; but instead of the Guild colophon, a notice in ornate gothic script flashed up, informing her that all external channels were unavailable. And then the words wavered and dissolved.

Strasser grinned at her.

"Please, Captain, remember that this is my domain, not yours. You cannot roam around at will. I'll catch up with you soon, just as I'll catch up with Hamilton. My men are waiting at the locks. There's no way out. So run while you can, Captain. I'll enjoy the chase."

"I know what you're doing, Strasser."

"Of course, you do. And now I'll have to deal with you as I dealt with Seymour Luis Baudero. You've betrayed a trust, Captain."

"So have you," Elena said. She killed the terminal and left the café, hoping that he hadn't had time to trace the connection.

She was deep in the maze of the service warren, on her way back to the jungle, nowhere else to go, when she realised that she was being followed. She took random turns, sprinting between intersections, but each time she stopped to listen, she heard footsteps behind her hesitate and stop, too. Whoever was following, he didn't want to catch her. Presumably because she was supposed to lead, like a Judas goat, directly to Lee Hamilton.

As she had the last time, Elena realised. But how had they known where she was going? She was sure that she hadn't been followed when she made her rendezvous with poor Baudero — he had been so jumpy that he would have noticed if a cockroach had been skittering after them. Yet Strasser had known where to find Baudero, had somehow known where Elena and Ham-

ilton had met in the tangle of the jungle.

And then Elena understood. Someone on the ship was a turncoat, but not necessarily a member of the crew. She hurried on until she found a deep air-shaft and dropped the 'caster into it. She was gone before it hit bottom, running as she turned left and right and left, ever deeper into the warren, her blood singing in her head. When she stopped at last, out of breath yet exhilarated, a pure adrenaline high, she could no longer hear the hesitant echo of following footsteps. She went on toward the jungle.

There were almost a hundred tunnels and service shafts and crawlways leading into the jungle. Elena chose one at random and waited for an hour or more on a branch hung over a sheer drop to the dark floor until she saw a monkey regarding her as it clung to the slender tip of a branch high above her own.

"Take me to Hamilton," Elena called, but the monkey plunged down out of sight without a word. Soon even the sound of its passage was gone.

Minutes later the screen of leaves in front of Elena rustled and a man, emaciated and naked but for a breechcloth, pushed through. "You come with me," he said.

"Where?"

"You want to see Lee Hamilton, don't you? Trust in the angels, Captain. Come on." He began to clamber down the latticework of branches, and Elena followed: at first a difficult descent through close-packed greenery and then an easy passage from bare branch to bare branch parallel to the jungle floor. It was almost like flying: they skimmed high and fast above rich stinking mulch, above fields of white mushrooms, above colonies of fan fungi as convoluted as the surface of a brain.

At last rock rose up, a jumble which the construction crew hadn't bothered to level. Trees grew over and around it, their branches hugging the rock planes and completely encircling protrusions with swollen scar tissue. It was dark here — the canopy of leaves screened out all but a fraction of the artificial light — and Elena failed to notice precisely when her guide vanished.

She stopped, then went forward hesitantly. There was a narrow crevice; she scraped her elbows and knees as she eased herself down. And then there was light, and hands reached up to help her into the chamber.

"Welcome," Lee Hamilton said.

She was seated on a natural chair of stone. Around her, a dozen men and women, all scrawny-shanked and almost naked, lounged or sat on ledges or on the rock floor. The two who had helped Elena down pushed her forward. Light came from a glotube upended on the floor; turned down to fractional output, it cast huge shadows over the walls, obscuring rather than revealing the crude figures daubed there. Farther back, Elena saw monkeys huddled in high crevices, outnumbering the humans by at least three to one. She

asked, "What is this?"

"Somewhere safe from Strasser. You come all the way from the bottom of the well; this here is the top of Jacob's Rock, where the angels dwell." Her guide had spoken; he smiled, showing a mouthful of rotten teeth. "As for this place, it belongs to the monkeys. A kind of temple."

The figures, Elena realised, were crude representations of humans, poised in various representative and emblematic tasks like a child's version of a Brueghel.

The man said, "No one in the Rock bothers much with the monkeys, or the rest of the jungle. Only us. Strasser sent us here as punishment for something or another. Criminals, all of us. You're welcome here, Captain." The others murmured and nodded.

"I don't know if you'll think that when you hear what's happened," Elena told him, and sketched the bare bones of what had happened after she had left Hamilton.

"That's bad," Lee Hamilton said when Elena was done. Abstractedly, she combed at her filthy hair with her fingers; in the low gravity, it took a long time to settle around her pinched face. "So now you're a criminal, like me."

"I wouldn't say —"

The man who'd brought Elena gappily smiled. "Like I said, we're all criminals here, Captain. Under Strasser's law, anyhow. You're welcome to stay."

"You might even win your wings," someone else called, to much laughter.

"All I want is to get back to my ship." Out of this anarchic stew. Back to the grey order of the Guild.

"Eat. Sleep. Then we'll see."

They brought her concentrate biscuits and cold milky tea, and Elena ate, out of politeness at first, then out of discovered need. The exhaustion of the last few hours pressed down on her bones, but she was too wired to sleep. For a while she talked with Hamilton, learning that the monkeys were descendants of those brought to help the construction crews fit out Jacob's Rock. Their main task now was to collect the leaves of a gene-melded mangrove that concentrated the salt which would otherwise accumulate at the bottom of the ecological cycle and kill off the degraders, the bacteria and fungi which recycled nutrients back into the system.

Elena asked, "And do they really worship these people? The angels?"

"Why not?" Hamilton smiled wryly. She sat close to Elena; a sweaty, ammoniacal tang rose from her. The glotube had been turned down farther, and her face was a mask of shadow. Except for the guide, slumped snoring in a corner, the angels had left. The monkeys mostly slept too, filling the cave with a rustling compound sighing. Hamilton added, "I guess if these people are angels, the monkeys are cherubs. Crazy upside-down cosmology. They can't leave the jungle though, no more than the angels can. This is all the help we can expect. So we're both trapped here, I guess."

"Only until I can contact my ship," Elena said. "Strasser has cut off the public channels, but there are other ways. That's why I came back. How well do you know this Rock?"

"I was stuck here a week before Strasser would let us fly our mission. I suppose he was fixing up our 'accident,' but I thought then that he was simply being obstructionist. I looked around some. And afterward . . . well, I hid in all sorts of places."

"There must be a communications center somewhere."

"Sure. The comm shack. Up near the Galleria. Handles all the internal traffic as well as the arrays that keep in touch with the mining tugs. But there are always two or three on shift there. If we try and take them, there'll be trouble."

"Oh, I don't want to take over. Just subvert something. Can you take me there, take me to the service area or wherever the cables are?"

"That's how I get around. I meet Baudero there. Used to meet."

Both women were silent for a moment; both had forgotten that the little ex-pilot had been killed. Eventually, Hamilton said, "Let's sleep first. If I'm going up against Strasser, I need to rest."

But Elena found it difficult to sleep, on the rock floor of the cave, in the negligible gravity in the center of Jacob's Rock. She kept waking from fuguelike dreams of tangled pursuit to the dim light of the glotube and the murmurous sighs of the sleeping monkeys. She was almost glad when the guide brought a poor breakfast, more biscuits and cold tea.

The light and heat of the jungle were unchanged. The guide led Elena and Lee Hamilton over the web of branches to a concrete silo in the muck of the floor. He undogged the hatch on top of it and grinned. "I wish I could go with you. Luck, now."

"Luck to you, too," Lee Hamilton said warmly, and surprised Elena by embracing the man before clambering through the hatch. Elena followed, and the hatch clanged shut behind her.

The service shafts were like a secondary map of the corridors ramifying through the rock, lit by dull red lamps that made Elena fantasise that she and Hamilton were threading the dried-out blood system of a giant. For the most part they could walk, gravity subtly increasing with each step, but sometimes junctions of pipes or airways forced them to crawl on their hands and knees, sometimes on their bellies. Once, where big looped pipes carrying hot water (part of the thermal system, Hamilton said) blocked their way, they had to leave the shafts entirely. Hamilton was nervous as they scurried down the brightly lit corridor to find a new hatch, and so was Elena, now that she had no weapon. She wondered if the 'caster had been retrieved, and if its case really had been made of gold; ridiculously, she couldn't get that thought out of her mind.

They climbed a long metal ladder past braided cables, ascending to a cramped mesh platform. "That way is the locks," Hamilton said. "And this

way is the comm shack."

"You really do know your way around."

"I hid here first, but after a couple of close calls I lucked out in the jungle. There's no food or water here, either. I was living on garbage."

I couldn't have done it, Elena thought. Alone, hunted, without resources: I would have given up. She squeezed past a duct, ripping her coveralls at the elbow. Hamilton touched a finger to her lips, bent close, and whispered, "We're right above it." She indicated a grill. Elena looked through and saw, beyond a slowly turning fan, a man with his feet up on a console. She heard his snore and smiled, then set to work finding the cable to the external communications net, which was easy enough once she had discovered a diagram some mechanic had tacked to a wall for reference.

As Elena peeled back the cover of the junction, Hamilton whispered, "How can you talk to them? It's fiber optics."

"There's a little laser every so often, to boost the signal." Elena put the cover back. "But it isn't here. Let's follow this."

They retraced their footsteps, Elena running a hand along the cable so as not to lose it amongst the hundreds of others, until she found the booster. When she took off the cover, the flickering light of the laser was like a tiny twinkling ruby. With a thread pulled from her torn coveralls, Elena began to interrupt the light in short and long pauses.

Hamilton watched, suddenly said, "Morse code!"

"Uh-huh. This'll be like static over every channel. One of my crew should notice it sooner or later. I'm asking my first officer to meet me." She repeated the message for half an hour, then straightened her aching back. Her sight was speckled with fuzzy afterimages from the laser.

Swimming amongst them, Hamilton said, "What happens now? I'm in your hands, Captain."

"We wait and see if it's worked. If not, we try over."

But they didn't have to wait long. They sat either side of a ventilation grill overlooking the tunnel of the *Avenida das Estréllas*, and presently Hamilton nudged Elena, who saw First Officer Arshenko's squat figure swim past. She had arranged to meet him in the Galleria, figuring the more public the place, the less Strasser could do about it. When she slipped into the seat beside the First Officer, his eyes widened. She'd never seen him surprised before. "Captain! What have you —"

"Too long a story." She indicated the café-crème he was nursing. "Go get me one of those." To her relief, he obeyed with the minimum of fuss, and she gratefully sipped the scalding liquid, thinking guiltily of Lee Hamilton squatting in a service shaft. She told Arshenko, "I want you to bring a couple of p-suits onto the rock. But don't use the conventional docking lock. I want you to leave the gig and go out onto the surface and come through one of the emergency locks. This one here." She pushed a piece of paper across the table.

Arshenko prodded it with stubby fingers. "This is highly irregular, Captain. Highly irregular. We have no jurisdiction on Jacob's Rock."

"You will find in my cabin a recording of Menge-Martin giving me permission. I think that's enough excuse."

Arshenko swallowed the last of his café-crème and scowled. "All right, Captain. But I hope you're right."

"Don't worry. I'll take full responsibility if this goes wrong. Anyway, I'll probably be dead if it does; there's something rotten here. That's why I have to get off the Rock this way."

"And the other suit?"

"A witness, if you like. That's what makes it dangerous. If Strasser finds us before you get back. . . ."

"I understand, Captain."

"I hope so. And find out about Menge-Martin. I want to be sure he's still aboard."

"It's a lot to ask."

"I'm sure you'll do your best. If this works out, I'll give you credit. Maybe you'll end up on a passenger run, yes?"

"Or maybe scraping tubes on the Luna hop. I'll try, Captain." He pushed his way through the clutter of empty tables. Elena waited a minute and then followed him out into the early morning pedestrian traffic.

The emergency air lock Lee Hamilton had chosen was high above the huge docking complex, in a hollowed ledge reached by a winding passage.



Anyone coming that way would be heard a long time before he was seen, allowing enough time to escape through the service shafts. Or that was the plan. Elena huddled beside the metal hatch, shivering slightly in the cold, occasionally standing up and looking down at the brightly lit cavern where technicians and laborers came and went using the web of lines that covered the walls, and always two men — Strasser's without a doubt — hovered near the docking tubes. Hamilton sat silently on the other side of the air lock. Both women had run out of things to say. There was almost no hope for them if the first officer didn't bring the suits, and they didn't want to talk about what they could do if he didn't come. Each waited, lost in her own thoughts, until the indicator light above the door changed from green to red. Someone was cycling through.

Elena sprang to her feet. Something clanged inside the door, and it slid back to reveal a figure in a bulky yellow p-suit. Its hands were empty.

Elena stepped floatingly forward. "What about the suits? Where —" And the suited figure slammed into her.

It recoiled as she shot backward in the zero gravity, then grabbed her waist with one gloved hand and the high railing at the edge of the drop into the lock complex with the other. Relentlessly, it pressed her up. Elena kicked as she felt the top bar of the railing slide down her back, but she could find no purchase; in a few moments she would be past the railing, floating by helplessly in the high air for Strasser's men to see. The bar scraped her buttocks. The metallic fabric of the suit, freezing cold, burned her skin; she could see her agonized face reflected in the anodized eyeball of the suit's helmet. Her one thought was that she had been wrong after all: the first officer was the traitor. And then the pressure lessened; Lee Hamilton was pulling at the life support pack on the suited figure's back. There was a flare of sparks, and the figure jerked back. Elena had the presence of mind to grab the bar and bring up her knee, then Hamilton was pounding on the helmet, bouncing with each blow and coming back to strike again. The figure was down on its knees as vapor plumed from the ruptured hose at its neck. By degrees, it went over.

Together, freeze-burning their fingers, the two women unlatched the helmet. It came away. Menge-Martin screwed up his eyes in fear.

"You bastard!"

Elena couldn't help herself. She slapped the man, tried to hit him again, but he dodged the blow, and she scraped her fingers on the neck of his suit.

"Who is this?" Hamilton was sucking her palm, seared by electrical discharge.

"The family representative. He gave me that 'caster I had, remember it? It was bugged. They could follow me anywhere. I suppose they hoped I'd lead them to you. If it wasn't for your monkey friends, I suppose they'd have succeeded, too. Bastard!" She was quivering, with anger, with spent fear.

Hamilton, more clear-headed, pulled a shiny cylinder from Menge-

Martin's belt. "Magnetic bottle, see?"

"Well, Seyour. And where were you going with that?"

Menge-Martin looked from one to the other. "You let me go, we can all benefit from this, really we can. There's enough for everyone. I won't tell Strasser. Trust me."

"So you were taking the contraband orthidium aboard. Strasser has you running errands, has he?"

"Captain, I mean what I say. There is more than twice as much orthidium in there as has been mined in the conventional way." Menge-Martin had regained a little of his pompous dignity, but not much; even he couldn't be pompous, sprawled on the floor in a p-suit with Hamilton pinning one arm and Elena the other — they weighed almost nothing, of course, but he couldn't get up enough momentum to shift their mass. He licked his lips. "Strasser and I are partners, but perhaps it is time the partnership was dissolved."

"Where is Strasser?"

"Ah, Captain you wouldn't expect —" Then Menge-Martin let out a squeal as Hamilton laid the point of a knife blade next to his eye. Elena, who hadn't even seen where she had drawn it from, nodded. Menge-Martin said, "He's at the processing plant, the light chromatography unit."

Elena said to Hamilton, "I thought that engineer — Jones — found that Strasser wasn't using the refinery."

Menge-Martin licked his lips. "No, not the family's. Our own. He's shutting it down now. With all the excitement of looking for Seyoura Hamilton, he'd dropped behind schedule."

Now Hamilton put the knife away — in a sheath at the back of her neck, Elena noted — and scrabbled at Menge-Martin's suit belt again, held up a little disc. "Is this the transponder that tells you where to go, up there?"

Menge-Martin looked at her. Then he said, "Yes, yes. Plug it into any gig or sled. It'll take you right to him. You see, Captain, I am cooperating."

"You're going after Strasser?" Elena asked.

"I'm going to do my best."

Elena prodded Menge-Martin. "Whose idea was all this? Yours or Strasser's?"

"Both, Captain. Oh, I admit Strasser had the original idea, but without me he wouldn't have had access to the extra equipment he needed or a means to dispose of the resulting, ah, product."

"And how are you getting rid of the orthidium?"

"Oh, there are certain . . . Your own ship, Captain, large as it is, is only just large enough to warrant carrying a fusion plant for its power. Smaller ships must use catalfission batteries, and that means orthidium, its supply regulated by the Federation. There are people who need ships, small ships. . . . But you are not interested in helping, so I must reserve further information. I must have some bargaining point."

"You won't have any need for it, once your family gets hold of you."

"They are *not* my family. All they gave me was this damned sinecure, not something commensurate with my talents. As for their revenge, the Federation will look after me. It will want to know about the groups I have dealt with." He smiled. "You see, Captain, I have it all worked out. Even when I lose, I do not lose everything."

"I'm tempted to turn you over to your family directly."

"But you will not, I think. It is against the law, and a Guild captain will not break the law."

"I've been doing all sorts of strange things lately," Elena said, and she was pleased to see Menge-Martin's uncertain, half-fearful look.

"Someone," Lee Hamilton said, "is trying to get into the lock."

Elena looked at the flashing light. "My God, Arshenko!" She cycled the door, and a minute later it slid open in a cloud of freezing air. A figure in a p-suit stepped out, holding like the trophies of some hunt the skins of two more.

First Officer Arshenko was not surprised to see Menge-Martin. He had discovered that the representative had left the ship hours earlier, and Arshenko had seen someone enter the air lock ahead of him. "I thought it was best to keep out of sight, Captain. I'm glad you had no trouble."

Elena looked at Arshenko's bland jowly face. "We had trouble, but now we have him. You can take him back to the ship. He'll go quietly."

"Of course I will, Captain," Menge-Martin said. He still lay prone, watching them all, and Hamilton was watching him, her narrow jaw set.

Elena kicked the magnetic bottle. "And take this, too. Put it in the maximum security store."

"Captain, you are not coming back directly? I thought —"

"I've changed my plans a little; now I can discover where Strasser is refining his contraband orthidium. I know how to find him."

"I must protest, Captain, about this personal vendetta!"

Lee Hamilton said, "You don't have to come. I don't even know what I'm going to do. What I can do. It isn't your fight."

"Strasser wants me dead. I count that as a personal affront."

"Captain, you realise that you are directly contravening Guild regulations. Your first duty is to your command. You are repeating your mistake of the *Illusion Dancer*. I urge you to come back, now."

"I didn't think you cared, Arshenko. But I'm going after Strasser with Lee here. Write that any way you want. Come on, Lee."

They clambered into the p-suits in the small, cold air lock, checking each other's systems before popping the seal, the evacuating air like an encouraging pat on the back. Then they were on the surface, with Arshenko's gig moored nearby and the coupling tubes of the lock complex a hundred meters away. This end of Jacob's Rock was a complex crater scarred by the

fusion blasts which had spun it up; the jagged rim wall was a solid shadow against the whirling starscape. Directly overhead, mining tugs hung in the launch scaffolding, the great bowls of their collectors like so many moons in eclipse; farther out, the long prickly spine of the refinery glittered with running lights. A mining tug, caught in a skein of cables, was having its collector scoured by slow, spidery mechanisms.

Elena looked for, but could not see, her ship; Lee Hamilton touched her shoulder and guided her to a tethered sled. Neither woman used her radio, but once they were standing on the sled's mesh platform, strapped to its frame, Hamilton touched her helmet to Elena's and her voice came through, muffled yet intimate.

"I knew Strasser was processing the stuff somewhere out here. Now let's see where."

She plugged in the transponder and actuated the sled. Its jets plumed briefly and they rose, past the moored gig, past the coupling tubes. Elena glimpsed the sphere of her ship distantly dawning beyond the refinery, and then the sled turned end for end, killing spin. Now the stars were still, and the dark scalloped crater was turning below. The main jet thumped, and the sled began to fall past the length of the rock.

Touching helmets, Hamilton asked, "What did your officer mean, about the *Illusion Dancer*?"

Elena sighed. "It was my previous command. One of the passengers started a fight with another, cut him up pretty badly. So I had him put in hard-class. He didn't survive it: one in two thousand don't."

"Oh. The Guild sent you on the long haul for that?"

"The man with the knife was the ambassador for Novaya Rosya to the Re-United Nations."

"Oh," Hamilton said again. The asteroid ponderously rotated beyond the mesh platform on which they stood, tumbled fields of rock punctuated with blebs and scars of ancient bombardment. The astronomer said, "I guess the Guild might thank you for breaking this thing up. It has to pay a high premium for orthidium, isn't that right?"

"I'm not doing this for the Guild. And besides, it's more likely to strip me of my commission than thank me. It likes its officers to follow regulations."

"That's a hell of an attitude."

Elena didn't reply, watching the dark slow rotation of Jacob's Rock with a bleak sense of things unravelling. When had she started down this road? When she had decided to meet Hamilton? When she had gone to the bar? Before that? She tried but failed to remember the precise moment of decision, the trigger for it. *Strip me of my commission*. . . . It codified the end of her ambition, the eighteen-hour days when she had studied for officer training after working her trick as a rating, the whispers behind her back in the officers' mess when she'd been the only woman there, the chauvanistic patronising New Brazilian (eighty per cent of Guild officers were New Bra-

zilian) bullshit. She'd come through all that . . . into what?

And then the sled overshot the end of the rock, the retros fired, and the stars were spinning again. Below was a flat landscape riven here and there with long, parallel crevices. *Click.* Hamilton said, "The other end, so damned obvious. Hold on now, I think we're going down." The sled touched and clung. "According to this, we're right above the transmitter," Hamilton told Elena as she plucked out the little disc transponder.

They unbuckled and cast around, shuffling slowly across the rock in the zero gravity, the stars hurtling dizzily, endlessly, from close horizon to close horizon. At last Hamilton gestured, pointing into the inky shadow of a crevice.

Elena followed Hamilton down cautiously, her wrist lights splashing bright shards on rock scored by cutting machinery. Despite the zero gravity, she fought a constant fear of falling: Alice down the rabbit hole. A faint glow dawned ahead, Hamilton's suited figure outlined against it: a passageway, the walls daubed with patches of faint phosphorescence. A turn, and the passage ended. Elena crouched down beside Hamilton, looking out.

It was a long, low-roofed chamber, most of it taken up by the spine of a light chromatography refinery and the associated machinery, a chiaroscuro of light and knife-edged shadow in the vacuum. Here and there, check lights of control boards glittered in tiny frozen constellations.

Hamilton touched helmets. "The field's down. You follow me in about a minute."

Elena grabbed the woman's arm. "Look, we know where this is, and we have Menge-Martin. What he's willing to say will seal Strasser's death warrant. If we leave right now, we can be on the ship, boosting out, in an hour. Strasser won't know until they come for him."

"If the ship leaves and he can't find any trace of us, he'll suspect something. No, I'm not going to risk it."

Elena couldn't see Hamilton's face behind the silver visor. "It's not worth either of our lives. Suppose Strasser is armed?"

"Maybe he is, maybe not." Hamilton shrugged free of Elena's restraining touch. "I'm going in with or without you, Captain Mendana. Do what you will, but if you want to help me, wait a minute after I'm gone, then create a diversion. Something that'll flush Strasser out."

"All he has to do is switch on the refinery. The induction'll do to us what Strasser pretended it did to your pilot."

"His name is Arrellano. Joao Arrellano."

"I only —"

"Sixty seconds," Hamilton said. "And switch your radio to general frequency so you know what's going down. Luck." And then she was gone, skimming headlong over the floor. To Elena, it seemed for a moment as if Hamilton was falling down a cliff, dropping into a maze of cables and machinery.

Elena followed more cautiously, inexpertly sliding one foot then the other, kicking over a waist-high cable, and belatedly remembering to chin her helmet radio.

"— to get you, Strasser!" It was Lee Hamilton's voice, distorted and shrill. "Come on out and get me!"

A diversion. Hamilton's voice ringing in her helmet, Elena swept a gloved fist over the settings of a control board, grabbed one of the cables that wove out of it, and pulled. Sparks spat straight trajectories for an instant. She went on, twisting valve after valve so that orange coolant fizzed into the vacuum, looked back, and saw how far away the passageway was now.

Something glittered in the shadows under the chromatography tube, and she turned just as the suited figure smashed into her, knocking her up and back, lights and machinery tumbling beyond her visor until she slammed into a fretwork of thin girders and clung. Below, her attacker spun in the opposite direction. If he had braced himself for the recoil, he could have ruptured Elena's suit by sheer force; as it was, her ribs ached as she struggled to catch her breath. Her attacker grabbed a pipe, and with sudden clarity Elena saw what he was going to do. So she pulled her line from her belt, clipped it to a girder, all this with Lee Hamilton's imprecations ringing in her head. She watched the clumsy figure, its comical fishbowl head, as it launched itself at her. She pushed away, feeling the line tighten and snap her round, swarmed back down onto the figure's back, and smashed its helmet into a strut. The figure jerked away as its arms flailed, and a plume of vapor and already boiling blood burst from the shattered visor. Her pulse loud now as Hamilton's threats, she gasped, "I've got him! I've —" The suit lazily tumbled, showing the ruined face within, its thin blond beard clotted with bubbling blood.

Before Elena could say anything else, a familiar voice cut the crackling carrier wave. Strasser said, "Ah, Captain. I have already told you, you have no business here. This is my Rock. Especially here."

About twenty meters away, a figure stepped from deep black shadow in the rock wall, and something shattered in red sparks less than a meter to Elena's left. She ducked down, and the damned line came up short just as Strasser's second shot smacked into her left foot. There was a bright instant of pain, and then the suit closed on her knee and fired nerveblocker into her thigh. She felt pins and needles shoot through the muscles below the joint, then a cutting cold, then nothing at all. The shot had creased the suit at her ankle, slicing material and the flesh beneath; Elena glimpsed a bubbling wound and looked away. Strasser had vanished. His mocking voice said in her ear, "I'll come for you later, Captain. You're unlucky. That shot was meant to kill."

Then she saw him, scaling the high curve of the chromatography tube, hand over hand across the ribbed cooling fins. And she saw Hamilton crouched above him, the long glint of the knife in her clenched glove. Stras-

ser saw her, too.

Elena could never remember, later, who moved first. Logic told her that Lee Hamilton must have thrown her knife before Strasser fired — her arm could not have outraced laser light — yet it all seemed to happen at once: the crimson sparkle of refracted laser light as Hamilton's helmet burst, the absolutely true trajectory of the knife, connecting with Strasser's belly and spinning him around; and the pistol flying away end for end, lost in shadow and light, as Strasser clutched at the rent in his suit.

Elena unclipped her line and pushed toward the wall. Her wounded leg trailed and spoiled her balance so that she landed short. She lifted herself up, her heart hammering and copper in her mouth, and saw, as she had guessed, that the deep shadow from which Strasser had emerged was a ragged doorway. She grabbed an edge of rock and swung through.

"There's no way out of there," Strasser's voice said in her ear. Elena turned and saw that he was pressing a patch to the ripped belly of his suit; his labored breath mixed with her own as she dragged herself around the dogleg turn and found herself in a small unlit control room overlooking the chamber.

"I'll find the pistol, Captain, then you're dead," Strasser's voice said. He was skimming down the side of the chromatography tube, hardly slowed by his wound, unkillable. Elena glanced around wildly, saw the shielded door, and understood. She dragged it closed just as Strasser kicked toward her, lurched to the control board, pushed all the slide controls to maximum, flicked up the guard of the main switch, and thumbed it.

The lights flickered, and she thought for a moment that the field had caught her. But then they steadied. Through the pane of armored glass above the control board, she saw Strasser's suited figure spasm and crash into the rock wall, lazily recoiling, its helmet glinting as it rolled in midair.

The first officer was not pleased, not pleased at all. From her bunk, Elena told him, "File all the reports you want, but Menge-Martin is going hard-class and so is Strasser."

"It'll make no difference to Strasser, Captain: he wouldn't even know if you put him through the air lock. In fact, it would be a kindness. But Menge-Martin is the family representative until we reach Procyon. You haven't the authority —"

"We're ten days to the breakout point, more than a week in transit, and two weeks to dock after that. Until we reach Procyon, I'm captain of this ship, and I don't want him roaming around."

"I can confine him to his cabin. But —"

"After all he's done? Look, I don't care what the regulations say. Put him in hard-class."

"Until we berth, his status cannot be revoked." Arshenko said doggedly. "I can keep him in his cabin because he brought a weapon aboard, but I

can't —"

"Cool him down. I assume you're taping this, so I say for the record that it's my responsibility. Seyour Arrellano is taking his cabin. He can't stay in the medical bay the whole trip. I know *he's* supposed to go hard-class. I'm changing his status, too. Okay?"

"Under your authority, then," Arshenko said.

"Do that." Elena punched the switch and tried to sit up straighter, wincing as the pressure cap on her thigh-stump moved slightly. The medic had had to cut high: it had taken her three hours to get to the sled and back to the ship, and despite all the suit could do, the vacuum damage had crept upward all the time.

Sitting across the tiny cabin, Arrellano said, "Thank you."

"The hell with it all. Now tell me how you're getting on."

Arrellano ran a hand over his shaven head, avoiding the crusted skin around the insert over his right ear. "I can talk, that's the best part. Not about, n-not —" He grimaced, hit at his thigh, hit again. "Not yet, but your doctor thinks she'll have me back to normal by the time we berth. Christ, the medical facilities you have here!"

"Our first-class passengers pay for it gladly."

"Yeah, well, the brain" — again he touched his shaven head — "was hurt. It took a day to get me talking, but it will take longer to undo the damage. They have to spin pseudo-neurons in the damaged area of my cortex. I'm a freespacer, Captain; I couldn't afford this kind of treatment normally. I can't think how to thank you —"

"I need your testimony."

"You've got it, of course." The smooth brown skin of his forehead creased. "I'd talk anyway. For Lee."

"Of course."

"She was a hell of a woman, Captain."

"You can tell me about her when you're a little better. I want to hear about her. Christ, I hardly knew her, and when the crunch came, I followed her without a thought. Went in there with her and hardly knew her."

"Yeah. She was something, Captain. I mean, she got me to risk my ass. A freespacer, right, and there I was, fighting for truth and justice." His tone was sober. "A couple of days, she'd have had half of Jacob's Rock on her side. If Strasser hadn't. Well."

"She had the angels." Who, when Elena had offered to take them off, had all refused. Their leader had explained that they were used to the jungle, and Elena, loggy from surgery, hadn't argued. She told Arrellano, "You get well, now, then you can help me."

"Captain."

"I've broken just about every procedural rule there is. Not to mention technically abandoning ship." A big step, yes. She thought of the angels, rulers of their microcosm, gods to monkeys while all the unplumbed uni-


verse lay outside. She said, "When we reach Procyon, they'll give me a new leg and make me out to be a hero, but they won't want me to stay in the Guild."

Arrellano said slowly, "But if you were a hero, you would not have to leave. Unless you wanted to."

She didn't answer him directly. "The method Strasser discovered, refining orthidium from the fire of a star, will change everything. The price of orthidium will drop through the floor once all the mining companies start using it. The Martin family won't be able to keep it a secret — hell, they'll probably *license* it. And the cost of intersystems travel will plummet as well. I used to be a pilot, intrasystems, before I got my commission. I'm a little rusty, but I was good, very good."

"Captain, I don't —"

"When this is over, I'll come find you, and you can help me find my way as a freespacer. I don't know much outside the Guild. I want to learn."

Joao Arrellano nodded, then grinned and reached out, and clasped Elena's hands with his own, a moment of shared understanding, the first touch across the gulf. 

WHERE TIME TRAVELERS ARE LOST

The sky is a primal blue shroud hung over the lakeshore
thickened by the purple of a volcanic smoke trail
the falling men seem unable to tell if they are falling or
if the green world rises up to embrace them where they sail

As proofs of a relative motion that Einstein had foreseen
each fumbles at belt dials and at chronometers on his suit
for it's these failures that bind them to the Pleistocene
flies pinned upon the shaft of a time that's absolute

Buoyed with vultures by hot gases and an equatorial blow
they circle fires of a hominid band upon the shore below
they spread their arms as if it were truly possible to descend
and take up a new life where the very oldest ones must end

— Robert Frazier

WHERE CREDIT IS DUE

by F. M. Busby

art: Brad W. Foster

F. M. Busby lives in Seattle, Washington, with his wife, Elinor, and their cat, Ms.

His published works include twelve novels and more than three dozen short stories. A number of the latter appeared in Amazing® Stories and Fantastic™ Stories, and six of those have been selected for inclusion in his collection Getting Home (Ace). His newest novel, The Breeds of Man, will be issued by Bantam Spectra Books.

When Jerry Rushmore opened his mail, he didn't expect a new credit card from the phone company. His old card still had several months to go before its mini-computer circuits would self-destruct. And while MaBell Global certainly wasn't error-free, this wasn't the kind of mistake the resurgent conglomerate usually made. In July, for instance, its computers had glitched the decimal point and sent him a monthly bill for nearly fifty thousand newdollars. But this —?

The card carried his 13-unit alphanumeric designation, all right, but not his usual green Class-A authorization, renewable yearly. As a literary and media-talent agent, he ran up a big enough bill to rate Class A and considered the rating a valuable status symbol. This card, though, was orange and labeled Class AAA. Jerry whistled. He'd never heard of Class AAA — not even rumors. And the termination-date space read PERMANENT.

The tiny keyboard was almost, but not entirely, the same as his other card's. Automatically, he punched for current balance payable. Zero — as it should be, since he hadn't yet used the thing.

An unfamiliar button read SPEC. INST. Special instructions, sure. He pressed it; across the readout line a stream of words began to flow. "Valid, without qualification, for all terminals in series 2 through 9. For series 0 and 1, query with regard to specific requirements."

It didn't make sense; no terminal numbers began with one or zero. Shrugging, he put the gadget in his card pouch; later he'd ask someone what this whole business was about. Maybe even MaBell Global, if he could get past the recordings to a human voice. He looked at the wrapper's postmark and whistled again. The package had come all the way across the city in only ten days, at the ordinary premium super-priority rate. Recently, a five-newdollar postcard, at that same rate, had taken forty-six days to cover a similar distance. It just went to show: the Postal Conglomerate *could* give good service, when it wanted to.

Inside his condo, after activating the security locks and alarms, Jerry dimmed the room's turquoise walls for better viewing and turned on the Tri-V news. In the middle of a Supreme Court story the sound came up. Jerry sighed; he couldn't truly approve some of the latest swings of the Supreme Court's pendulum, but . . . *Well, let's see . . .*

" . . . reversed the robbery and assault convictions of professional mugger Jervis Frotzell on the grounds that his elderly victim, obviously under the influence of adrenaline, had clearly attempted to defend herself."

Well, that made sense. Total prohibition of the adrenaline high had certainly reduced violent crime. Of course some people, especially older ones, had trouble adapting to the new rules. Jerry himself couldn't always make do with alpha-state meditation, but that's what tranks were for.

"So this is how it shakes today, friends," the reporter said. "Al Binder here. And now, after these words, back to Outer New York."

Jerry cut the sound. It wouldn't turn off, of course, until after the commercials, but his internal screening against those was automatic. "Back to Outer New York," though, meant back to the anchorperson, and this particular one affected the use of Black English. Sheer swank, that was; she was a blonde named Halvorssen. But dialects and accents rubbed off on Jerry, and in his line of work he could hardly afford to talk Black English with a Swedish accent.

Carefully spreading depilatory cream on the sides of his head, Jerry considered what he'd heard. The anti-adrenaline law had its loopholes, all right — such as the existence of persons like the mugger Frotzell, who needed no adrenaline to commit violence. *But what's perfect?* Jerry shrugged.

He wiped off the cream; in the mirror, he checked results. Yes — sides fadshionably smooth, highlighting the brown brush-cut strip along the top, with his back hair bleached and neatly pigtailed to shoulder length. He'd do.

This latest fadshion looked silly to him, but no worse than most. The thing was that keeping up with fadshion was essential in the business world. And Jerry Rushmore was thirty-two; if he ever wanted to Get Up There, he'd better get a move on.

It paid to play cautious with fadshion; trends could fool you. When the Court ruled beards to be a violation of women's rights, since females couldn't grow them without using hormones, Jerry had gone with the big rush for permanent baldness of the cheeks and chin. But now when he traveled abroad, where local males grew their faces out if they happened to feel like it, he felt deprived. Maybe, even, a bit inferior. Which might be why he hardly ever went outside Partial America, these days.

He'd glitched worse than that, though, Jerry had. He'd gone overboard for the Church of Pristine Spirit and worked himself all the way up to the



Circle of Purity; how he'd gotten nailed so hard, on that particular fadshion kick, he couldn't now imagine. And he'd *known* the Communion-Cola was zonked, and had half-suspected subliminals in the moog behind the mass chants, but still he'd gone with all of it.

He felt his face make a scowl. Nearly a year now since he'd learned that Purity was no longer a mere option for him but a settled condition, and had ditched out from the Pristines and never looked back. But still the effects hung on. At the weekly meetings of his Intermittent Family, with Bobby and Billy and Ronny and Micky and Terry, they were hinting that he'd joined the group under false pretenses. Bobby was the worst; to hear that one tell it, Jerry was staying this way on purpose. Well, a lot *they* knew; none of them had gotten even close to the Circle of Purity. With the Sacred Pills, and all . . .

But surely the problem couldn't last forever. He hoped.

Tonight was another Family evening, and after that session, Jerry had some business calls to make. Outside his building's security gates he caught a seat in a multicab, and only twice did it overheat and stall. So except for the minor delay of about an hour, he arrived quite promptly.

Until pairing time everything was fine, but that didn't go at all well for him. And Bobby was downright unsympathetic — didn't even *try* to pretend. So Jerry left early. Not "early" meaning within an hour after the session ended, *really* early.

He wasn't at all sure he'd go back again, not ever. But the way he was feeling — peevish, dangerously close to the forbidden adrenaline-high state — he didn't think it would be a good idea to say so. Maybe what he needed was some extra meditation and the blue pills. And more time . . .

Outside in the grey tunnel he waited for a multicab, but none came. Turning left, he walked for a long time. He'd gone more than a hundred meters, and was getting quite tired, before he found a phone shelter. Inside it — naturally, the light wasn't working — he got his credit card out and pushed its date-time button. Yes, it was a reasonable time to call one of his major clients — Alidace Wrenn, whose contract was up for re-clawing.

Alidace had a feud on with MaBell Global and refused to pay for an individual phone. Wrenn's condo building, though, provided a security-sheltered phone on each floor, with automatic paging to the residence suites. Jerry put his card into the phone's slot, wiggled it to make sure the connector leads were making contact, and punched up the number he wanted.

Outside the shelter, the lights blinked; the background changed color and brightened. Jerry blinked, too, because he wasn't in the tunnel now. He was in the phone shelter on Alidace's floor of the condo building, and the walls were yellow.

Zonk-juice or no zonk-juice, not even in the Church of Pristine Spirit had

Jerry Rushmore hallucinated. Well, not unless he counted the time when gravity was sideways. But now, holding the door shut as if he expected the cubby to eject him, Jerry peered outside.

It was the condo, all right. It couldn't be, but it was. *So face it*, he thought — and looked at the phone. From its slot, the credit card protruded. The orange one, the new one. He shook his head. In the dim light he hadn't noticed; he'd thought he had the regular green one. But this orange one had put him *here* — and brought itself along, too.

Class triple-A, huh? Well!

As long as he was here — and never mind how it had happened! — Jerry decided to look in on Alidace, so he came out of the shelter and hiked the long haul to Wrenn's unit. He put his ID to the scanner and punched for ANNOUNCE. Alidace was never one to hurry in the name of courtesy, so while he waited, he practiced deep breathing. Here, in filtered air, it couldn't harm.

Eventually, Alidace opened the fortress-like door. Looking, once again Jerry felt the nagging wonder. Alidace stood tall in heavy, flowing robes that gave no hint of bodily contours. If there were an Adam's apple, the high neckline hid it. The strong, smooth features formed a radiant smile. Thick black hair was groomed in the current ambigexual fadshion — the sides of the head as smooth as Jerry's with top and back both curly in a medium length. And of course the lack of whiskers gave no clue.

Nor did the throaty voice. "Jerry! What are you doing here? I expected you to call. But do come in." Alidace turned and Jerry followed. Behind them the door clanked shut, and he heard the safety bolts slam home.

In the vermilion-paneled room he accepted the offer of a seat, then a tall iced glass of lemon-flavored liquid. He detected the light lacing with alcohol and cannabis, and decided he could handle those well enough. *On top of everything else, why not?*

Across from him, saying nothing, sat Alidace Wrenn. Why did they do it, the ambigexuals who kept their gender secret? What pleasure did they derive from the masquerade? Well, certainly, performing on Tri-V and daring the viewers to find out had made great lovely piles of money for Alidace. Maybe that was all there was to it: capitalizing on a fadshion that had lasted longer than most.

Outwaited, finally Jerry had to say something, so he brought out the contract proposals and tried to concentrate on them. While part of his mind still beat against the question of how he'd come here, and a lesser part nagged at the enigma of Alidace Wrenn, he heard himself making quite reasonable proposals for contract changes, and Alidace accepting most of them. When they were done — and Jerry had declined the offer of a second glass of whootch — he tuned his mind for the obligatory farewell ritual. This time, maybe, he could determine which way the gender rendered. But when he

stood, face tilted up to Alidace's fervent kiss, he still didn't have the faintest clue.

Well, it wasn't as though it could possibly matter.

Back the long way down the corridor, Jerry closed himself into the phone shelter and looked at his two credit cards. Green, orange — which to use? Call the multicab network for a rendezvous down in the tunnel, and go home the safe way? Or —?

With orange card in the slot, he activated his home terminal's number.

The lights didn't blink; nothing changed. *Nobody home*. Well, SPEC. INST. had said "properly equipped terminals," so it looked mighty much as though Jerry's home base wasn't arranged for MaBell Global to dump him there, even via triple-A priority. Not so easy, then.

So. He hadn't entered DIRECTORY onto the new card yet, so he punched it up on his trusty old green one. Now, which numbers might be properly equipped?

The Tri-V network office! And this time of night, there shouldn't be anyone there either. Jerry giggled. Maybe the whootch was getting to him, after all — or maybe it was the crazy *setup* that had him close to jumping up and down and cackling. Who cared? His fingers moved and the lights blinked; the walls turned striped and he recognized them. Sure enough, the network office.

"Well." It wasn't much of a comment, but it fit.

He frowned. From here it was a long way home, but he didn't feel like going home, anyway. Why not scout around more, first?

But where? Once more he scanned DIRECTORY readout. Hey! Why not the Antarctic satellite-feed station? If any place should be properly equipped, it was that one. He fed the number in, and the lights blinked.

Outside the shelter, the multicolored walls loomed high. That part was all right, though Jerry couldn't see much through the steamlike haze that filled the vast roofed space. What bothered him was the loud clanging, like some kind of alarm bell.

And when the squad of armed Marines — or what certainly looked a lot like armed Marines — came running toward him out of that haze, Jerry began to worry.

Not for long, though; he didn't have the time to spare. He pulled the orange card free, read SPEC. INST. again, and nodded. Then, whether his decision made any sense or not, he acted on it.

He punched for the zero series — after all, the card wouldn't mention it if it didn't exist. But then what? He didn't know any numbers that went from there. There had to be some, though, and those armed men were getting close. He had time, maybe, for two or three tries. So he hit three digits with-

out looking and then went 1-2-3-4-5-6-7-8-9-0.

He heard ringing, so this was a bad number, with no "proper equipment." He started over: 0-0-0-0-9-8-7-6-5-4-3-2-1, and he wished those men wouldn't run so indecently fast. Ring, ring, ring, then click, and someone said "Hello" with an accent Jerry didn't recognize. He hung up, raised the handset again, shut his eyes, and punched thirteen times at random.

No ringing. Eyes open, now. Lights blinking, walls moving jerkily, each time changing color as one outside view after another appeared and was replaced in turn. Relay stations? Had to be.

Then after seconds of wavering, the light came blue and fiercely glaring. Squinting against it, he saw a person near him and approaching.

Person? Short, fine-textured fur covered its shapely face and four-breasted torso, down to the waist where its clothes began. *It?* Not hardly. *She.*

Wha—?

The redundantly endowed female touched the shelter's door; it opened. She spoke, in a trilling way, no words he knew. The lower breasts were smaller than the upper, and all four jiggled a little. Firmly, though.

Jerry shook his head. She switched lingoos, but still no dice. Raising her furred brows that bore no special markings, she gestured toward him.

"My turn?" What to say? Tritely, he made do with, "Where am I?"

Showing more teeth than he was used to, she smiled. "Oh. You are one from Earth, aren't you?"

Her name was Tlilillith, and she took him home with her. She lived not awfully far along one of the many corridors that led out from the great, glare-lit hall, in a moderately sized palace underground. In the entire place, the one familiar thing was the phone. Jerry could have sworn it came from MaBell Global, and it was just about the only furnishing that didn't have a spangled finish.

The invitation included dinner, and when Tlilillith dished up the chow, Jerry realized he had a solid appetite. She went a little heavy on the bunny fodder, and he wasn't really much of a greens junkie, but he cleaned his dinner pouch anyway.

Afterward, they had drinks he liked, and then a misunderstanding he didn't like. Her offer, on such brief acquaintance, surprised him, and he hated to let her think he didn't appreciate it. But if even Bobby couldn't understand that his problem was entirely due to the Church of the Pristine Spirit, how in the worlds could Tlilillith? Finally, she said, "You are not like the others, are you? Too sorry."

He wanted to say something but couldn't think what. Tlilillith shrugged and poured him another drink, then said, "What is your work?" Jerry still felt embarrassed, but they talked amiably enough for a time, until the door alarm tootled.

* * *

The man Tlilillith admitted to her spangled quarters didn't have three ears or anything. His hair was cut unfashionably, all pretty much the same length except shorter around the edges. And he wore the quiet, understated uniform of MaBell's security force. So with a fair idea of what this man was and where he came from, Jerry clammed up, waiting for the other to speak first.

Mr. Security did. "Gerald Rushmore, I believe. We've had quite a time, following your progress." His thin face smiled like saying "cheese"; Jerry smelled limburger. Again he waited; the next words were, "Some people can't resist capitalizing on a computer error. Too sorry."

Jerry's waiting brought nothing more, so he went back to basic tactics. "Where am I?"

The man raised pale brows. "Disregarded the special instructions as well, did you? Total irresponsibility, the curse of the consumer class." He shrugged. "Abbadabba Seven, we call this world. It's seventh from a sun we can't pronounce, so we gave it a code name."

Jerry nodded. "Yeah. I knew we had to be someplace really else. How did we all get here?"

Security wagged a finger. "The company isn't telling. Let it suffice" — suddenly, his voice sounded like a recitation from one of MaBell's promotional brochures — "that the gap between the stars has been bridged. And who better, to maintain careful restraint on Earth's intercourse with other worlds, than your benevolent telephone company?" Jerry thought the man was done talking, but not so. "Considering our mastery of highly technical expertise, of course."

Jerry wanted to look placid, but he felt his eyes narrow and knew he couldn't get away with playing stupid. So he might just as well let it all spray wide and splash. "You didn't do it, though, did you?" He pointed to Tlilillith. "They came to us, not the other way round. And MaBell Global got the inside bite somehow, and glomped onto it. Five gets you ten, that's what happened."

Before the other could answer, Jerry went on. "What do you expect to do with all this? Rule the world or something?"

The man wasn't quite sneering, but his smile came close. "In a sense, perhaps, but not the way you're thinking. I've heard the confidential orientation tapes, and I assure you —"

"No." Shaking his head, Jerry considered alternatives. "Hush-hush dictatorship, you mean. I don't sign for it."

Rising now, Mr. Security grinned. "You don't have to; the choice is not yours. My superiors guessed how you might react, and the output is that I repossess your orange card, issued in error, and that I do so *here*. Though we've already coded it out of the network, of course. So you won't be going home, Mr. Rushmore, to spread subversive nonsense."

Jerry shook his head. "If you've killed the card, why do you need it back?"

After all, the man could be lying.

"Evidence, Mr. Rushmore. And of course the company wishes to reclaim its property."

Somehow the man's argument sounded flimsy. Jerry said, "You'll get the card back when it expires, and not before." Considering that the renewal date read PERMANENT, he thought that was a rather good line.

But Mr. Security was between him and the door. And now, feet shuffling in the *chan-zinb* combat mode restricted to law-enforcement agencies, the man moved forward.

Momentarily, Jerry felt the forbidden urge to resist; then his defiance collapsed. *But I don't know how to fight! It's never been allowed!* Frantic, Jerry backed away, kneading his empty dinner pouch between his hands. When had he picked it up, and why? He couldn't remember. Suddenly, he turned the pouch inside out and threw it down toward the shuffling, remorselessly advancing feet.

Eyes fixed on Jerry in a hypnotic stare, Mr. Security slipped on the oily bag and landed flat on his credit cards.

Out the door Jerry went — no guard bolts here to slow him down — out into blue glare that slitted his watering eyes. Pell-mell to the phone shelter, and there he turned. Hobbling in pursuit, Mr. Security was still some distance away.

Breathing hard because he wasn't used to running, Jerry tried to think. Even if the orange card still worked, he couldn't go back to Earth; MaBell would lock him up and lose the key. But maybe — he searched his kipple-bag and found writing materials. Quickly he scribbled, telling what he knew and what he guessed, hoping that someone would be able to read his writing. *He* couldn't, once it got cold, but that didn't prove much.

He laid the brief note alongside the phone and button-punched, with a triple-zero prefix, the number of the Tri-V network headquarters on Earth. Then he jammed the orange card into the slot, jumped back, and closed the shelter's door. As he moved, its lights flickered, but he was outside now, and safe. Inside, the note vanished, and the card with it. The man *had* lied.

Footsteps, pounding closer. Safe, he'd thought? Not exactly, for here came Mr. Security, face reddened and arms flailing in the *chan-zinb* preliminaries. Jerry felt his breath run short.

Oh, the hell with it! He was stuck here — where the Supreme Court, with its doctrine that victims must never resist, couldn't reach him. Just in time, he kicked Mr. Security in exactly the right place.

Jerry's head hurt, his ribs ached, and he wasn't sure he'd want to eat, ever again. Considering what Mr. Security had done after he quit howling and could straighten up again, apparently a good kick wasn't all it was cracked up to be. Maybe even the Supreme Court could be right, once in a while.

But the MaBell man was gone now, huffing off to file another complaint, and now in Tlilillith's quarters she wanted Jerry to eat some soup. After a while he managed with it. Vegetable, of course, but he couldn't always win.

When he was done, he made a call to Earth; his green card wasn't authorized for that, but Tlilillith let him use her blue one. And then he found he hadn't won much of anything, at all.

He couldn't run his business from here; even if he could have handled his temperamental clients by remote control, the toll charges would have exceeded his commissions and wiped him out. For that matter he was already wiped out; his transfer to Abbadabba Seven had cost more than all his assets back on Earth.

Tlilillith hadn't said anything about his leaving just yet, so he stayed and she made him another of the drinks that he liked. Halfway done with it, he said, "It muchly looks like I'm stuck here. What can I do now? To make a living, I mean."

Her frown gave him a nervous flutter in a place that was already hurting. "That," she said, "is not your problem. From what you say of your work on Earth, you could do quite well here. Given time, of course, to adapt to our different ways. But —"

But. Jerry's solar plexus turned to lead; feebly, he waved a hand. "All right. Drop the other shoe."

Her softly-furred brows raised in puzzlement, then she nodded. "Your phrase is apt. Too sorry, but the other shoe is that you have no acceptable connection here, to allow you to stay. That you must be returned to Earth, with the charges made collect."

When the shock wore off, Jerry tried to get back to making sense. "Think hard, Tlilillith. How *could* I stay?"

Her lambent gaze flicked away from him, then back. "I could adopt you as ortho-husband; I am, after all, authorized one more. But" — she shrugged, and again her harmonic pectoral motions entranced him — "the relationship demands certain interactions, and when I offered these on a trial basis, you declined."

Blushing and desperate, Jerry overcame his embarrassment and told her all of it — the Church of Pristine Spirit, the Circle of Purity, the involuntary purity he was damn well sick of. "Isn't there anything known," he said, "here on Abbadabba Seven, that might help?"

Her eyes slitted, then went wide; she said, "Physically, yes. Those Pristine priests were here, too, and converted so many of our males that eventually the High College of Shamans had to devote a sizable share of its research budget to the problem of reconversion."

Almost spilling his drink, Jerry leaned forward. "And did they find a cure?"

She nodded. "Yes. But the injections are most costly. A substance called, I

think, aggremmulant."

"Come again?"

Fumbling at pronunciation, she tried the word a few more times. Until finally . . .

"Adrenaline!" Jerry yelled.

"Yes. That is it. But besides the cost, which neither of us could afford, the treatment takes much time. Long before it might reach effectiveness you will be returned to Earth, charges collect. Jerry, I am sorry."


"Too sorry?"

"No. More than that."

She looked it, too. But suddenly, Jerry realized something. His recent rumfus, his current anxiety level, his pulse running a lot higher than the Supreme Court would approve . . .

He reached for her. "Tlilillith? Maybe you don't have to be sorry. Maybe I don't need those treatments."

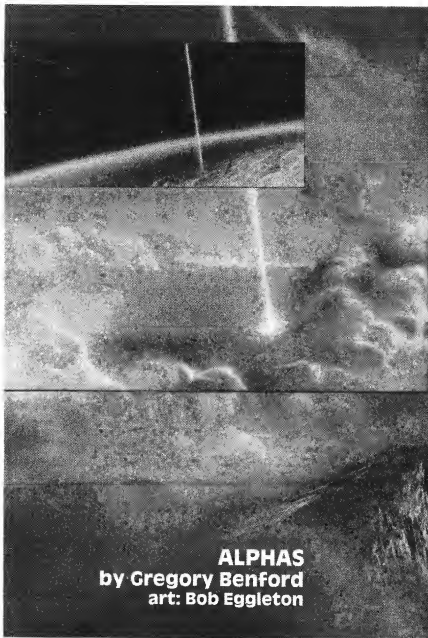
"But of course you must. Everybody — *mmph!*"

One nice thing about Tlilillith: she certainly was a good sport about losing an argument. 

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ALPHAS
by Gregory Benford
art: Bob Eggleton



Chansing did not intend to become famous throughout the solar system. He was a private, close-lipped man, and he disliked media chatter about his sacrifice, his quickness, his daring.

Still less did he plan to be the butt of a thousand jokes. Or the central element in a standard examination question given to undergraduate physics majors.

But all this happened because of the Alphas.

The name stuck to humanity's first alien visitors, despite the fact that it merely referred to their direction of approach — Alpha Centauri. The Alphas did not come from Earth's nearest star, and indeed, no one ever did discover their origins.

Or much else. The Alphas simply decelerated into the solar system and began their tasks. They made no attempt to speak with the burgeoning human society of 2126 that was clinging to the asteroid belts and laboring on its first Mars colony.

This in itself was vaguely insulting. Matters got worse.

When a team of linguists did make rudimentary contact with the Alphas, they learned only that the aliens were not particularly interested in the heights of human culture, or in mankind's view of the meaning of it all, or the wondrous beauties of Earth.

The Alphas were here for a job, period. Their sole repeated message to mankind, delivered in English, Spanish, and Chinese, was:

Stay back. Do not attempt to interfere. Our work will be of no harm to your enterprises.

One might think this would be clear and convincing. After all, the Alphas' first project was the clearing of the Venusian atmosphere — a task human engineers thought would take centuries. They did it inside eight months.

With a twist, however. The Alphas did not convert Venus into an Earth-like Eden. The atmosphere was still an unbreathable muck of muggy carbon dioxide and assorted noxious sulphuric winds.

But one could see through it. For the first time in four billion years the perpetual shroud parted. The great steeped volcanoes and yawning canyons of Venus lay bare.

The Alphas apparently wanted clear air in order to more easily build massive, sprawling complexes around both poles of the Venusian spin axis.

Earth ships hovered tens of millions of kilometers away, the closest the Alphas would permit anyone to approach. Their instruments showed that these Alpha polar stations produced enormous magnetic fields that oscillated fiercely.

More than this no one knew. Even the linguists had never actually seen an Alpha.

Unmanned ships sent to nose about the Venusian area came back as burnt crisps. One would have thought this was ample warning.

But when a secret government expedition sought out Chansing to pilot a

high-tech, stealth-augmented mission into polar orbit around Venus, Chansing considered it carefully. He had always been a risk-taker; three high-velocity missions to the Jovian moons and multiple scars attested to that. He was the most famous daredevil in the system.

He also knew that if he turned this down, the government would go looking for somebody of lesser repute. And if that guy made it back from Venus, nobody would remember Chansing anymore.

Pursuit of fame was not the fulcrum of his character. Simple pride, calm and sure and laconic, accounted for nearly everything he did. Here was a gamble that could pay off far larger than any ore strike.

So he went. He had never had much of a head for science itself; few pilots did. Even though this was a scientific expedition, designed to ferret out the secrets of the Alphas, Chansing did not think he would need to know much more than how to dodge and swerve at high speeds.

This was only the first thing he was wrong about.

Matters went well at first. The expedition ship slipped into orbit under cover of an extensive solar storm, supported by an electromagnetic scrambling burst from the massed radio telescopes on Earth and the Moon.

But by then there was something else in orbit around Venus.

At first Chansing did not believe that the image floating in the large screen could be real.

"You check for malfs?" he asked Doyle, the ship's systems officer.

After a long moment she said, "Everything checks. That thing's real."

Chansing did not want to believe in the glowing circle that passed in a great arc through free space and then buried a ninth of its circumference in the planet. Without understanding it, he knew immediately that this was tech-work on a scale that made their mission look pitifully inadequate. And dangerous.

"Magnify," he ordered curtly. He knew not to show alarm. The scientists around him in the control vault were visibly shaken. They had been arrogant enough on the trip out, sure that their stealth shielding and projectors would work fine. Now their drawn mouths and hooded eyes told Chansing more than any tech-talk could about their chances.

The hoop was half again larger than Venus. Its uniform golden glow seemed to dim the sun's glare. The opticals zoomed in for a close-up. As the image swelled, Chansing expected to see detail emerge. But as the rim of Venus grew and flattened on the screen, the golden ring was no thicker than before, a brilliant hard line scratched across space.

Except where it struck the planet's surface. There a swirl of fitful radiance simmered. Chansing saw immediately that the sharp edges of the ring were cutting into the planet. Venus's thick blanket of air roiled and rushed about the ring's hard edge.

"Max mag," he said tensely. "Hold on the foot, where it's touching."

No, not touching, he saw. Cutting.

The blue-hot flashes that erupted at the hoop's foot point spoke of vast catastrophe. Clouds boiled like fountains. A green tornado swirled, its thick rotating disk rimmed by bruised clouds. At the vortex violence sputtered in angry red jets.

Yet even at this magnification the golden hoop was still a precise, scintillating line. It seemed absolutely straight on this scale, the only rigid geometry in a maelstrom of dark storms and rushing energies.

The physicists and astronomers gaped. He felt their presence at his back. The ship was cramped and they were always kibitzing.

"Give us some room," he said irritably, even though they were only peering through the rear hatch.

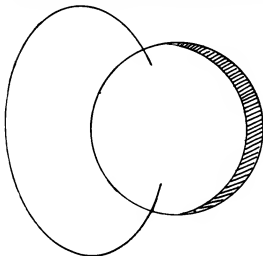
"It's moving," Doyle whispered, awed.

Chansing could barely make out the festering foot point as it carved its way through a towering mountain range. The knife-edge brilliance met a cliff of stone and seemed to simply slip through it. Puffs of gray smoke burst all along the cut. Winds sheared the smoke into strands. Then the hoop sliced through the peak of a high mountain, its rate not slowing at all.

He peered carefully through the storm. Actual devastation was slight; the constant cloudy agitation and winds gave the impression of fevered movement, but the cause of it all proceeded forward with serene indifference to obstacles.

"Back off," he said.

The screen pulled away from the impossibly sharp line. The hoop, no longer a perfect circle, pressed steadily in toward the axis of Venus. It flat-



tened on the side that pushed inward.

"Lined up with the pole," Doyle said. "See? I've projected it onto the planet's image."

Computer-processed graphics coalesced. With clouds eliminated, he could see the entire structure.

The hoop's flat side was parallel to the axis of Venus's rotation. It held steady on the planet's surface, so it must be revolving at the same rate as the planet.

"Where'd it *come* from?" one of the physicists asked.

Chansing smothered the impulse to cackle with manic laughter. Somehow the Alphas had brought this thing, or made it, without anybody detecting it. A planet-sized surgical knife.

"Probably just wasn't lit up before," Doyle said reasonably. "Now that they're using it, we can see it."

Yet in a way his instincts warred with his intelligence. The hoop shared a planet's smooth curves, its size, its immense uncaring grace. Chansing struggled to conceive of it as something made by design. This was tech beyond imaging.

"It's moving toward the poles," Doyle said, her voice a smooth lake that showed no ripples. Chansing liked her nerve. If he ever settled down and had a wife, he knew it would be a woman like Doyle.

The scientists, though, muttered uneasily. Chansing had felt crews get jittery before and didn't like the sound of those amateurs.

"Let's get closer," said Eardley, a small woman nominally in charge of scientific matters. Chansing was supposed to follow her orders. But not if it endangered the ship.

"Don't think it's a good idea," he said.

"The closer we are to the planetary surface, the better we'll avoid infrared detection," Eardley said, reciting what everyone knew already. That was her style and Chansing had to make himself ignore it.

"Okay." He went through the motions of bringing them slightly closer in. They were still farther out than the strange luminous ring, and he was damned if he would go much nearer. He checked the stealth radiators that were supposed to hide them from the Alphas. Everything still looked good.

The hoop glowed brighter and flattened more and more as its inner edge approached the center of Venus. Chansing felt suspended, anxious, all his clever plans for this mission dashed to oblivion by this immense simple thing that sailed so blithely through a planet.

His imagination was numbed. He struggled to retain some grip on events by digressing into detail. "How . . . how thick is it?"

Doyle's glance told him that she had noticed the same strange lack of dimension. "Smaller than a ship, I'd judge," she said, her eyes narrowing.

"That small," Chansing said distantly, "but it's cutting through . . ."

Doyle said, "The planet doesn't split."

Chansing nodded. "Some places you can see where the thing's cut through rock and left a scar. But things close up behind it."

"Pressure seals the scar again," Doyle agreed. She smiled and Chansing recognized the look of almost sexual relish. She liked problems — real ones that you could get a grip on. So did he.

"It's no kind of knife I ever saw," Chansing said, the words out before he saw how useless they were. Doyle arched an eyebrow at him. But he had to say something and keep his voice calm and matter-of-fact; he could sense the scientists getting itchy at his back.

"If it eats rock, how come it's so thin?" he said with elaborate casualness. Somebody laughed merrily, and somehow the meaningless joke relaxed the small party.

This released the scientists, and a torrent of speculation broke among them. Chansing couldn't follow it. Instead, he consulted his chip-imbedded Advisor, a partial intelligence culled from a long-dead genius named Felix. The thin voice spoke in his mind.

I do have an idea, if you would care to hear.

Chansing caught the waspish, haughty air the Advisor sometimes projected when it had been consulted too infrequently for its own tastes. It rode in a small pocket in his lower neck. Perpetual monkey on his back, Chansing often said. He murmured a subvocal phrase to entice Felix to go on.

I believe it to be what was called by theoreticians a cosmic string. I have studied such matters in my youth, and recall the physics underlying such hypothetical objects.

Chansing grimaced at the Advisor's supercilious tone, but again indicated his interest. He thought in a private cloister of his mind, *Advisors smell better if you give 'em some air*, and resolved to let Felix tap into his visual and other sensory webs more often. It kept them from getting the Advisor equivalent of cabin fever.

Strings were made at the very earliest moments of our universe. You can envision at that time a cooling, expanding mass. It failed to be perfectly symmetrical and uniform. Small fluctuations produced defects in the vacuum state of certain elementary particles —

What the hell's that mean? Chansing thought irritably. He watched the hoop slowly cut through a slate-gray plain. Around him tech-chatter filled the control vault. Scientists needed only the tip of an iceberg to start them endlessly guessing.

A good analogy. Think of ice freezing on the surface of a pond. As it forms, there is not quite enough area, perhaps, and so small crinkles and overlaps appear. Ridges of denser ice mark the boundary between regions that did manage to freeze out smoothly. All the errors, so to speak, are squeezed into a small perimeter. So it was with the early universe. These exotic relics have mass, but they are held together primarily by tension. They are like cables woven of

warped space-time itself.

So what?

Well, they are extraordinary objects, worthy of awe in their own right. Along their lengths there is no impediment to motion. This makes them superconductors, so they respond strongly to magnetic fields. As well, they exert tidal forces. Only over a short range, however — a few meters. I should imagine that this tidal stretching allows it to exert pressures against solid material and cut through it.

Like a knife?

Yes. The best knife is the sharpest, and cosmic strings are thinner than a single atom. They can slide between molecular bonds.

So why's this one cutting through Venus? It just fall in by accident?

I sincerely doubt that such a valuable object would be simply wandering around. The Alphas are sophisticated enough to understand their uses.

Using it? For what?

That I do not know. I would imagine handling such a mass is a severe technical difficulty. Since it is a perfect superconductor, holding it in a magnetic grip suggests itself. Thus the Alphas' polar stations.

Chansing recognized Felix's usual pattern — explain, predict, then pretend haughty withdrawal until Chansing or somebody else could check the Advisor's prediction. He shrugged. The idea sounded crazy, but it was worth following up.

To Doyle he said, "Analyze the magnetic fields near that thing."

Doyle quickly nodded. "I'm getting something else, too."

"Where?"

"Coming up from near the south pole. A lot of fast signals —"

"What kind?"

"Like a ship."

"Alphas." It was not a question.

"Looks like."

Chansing peered at the screen. The glorious squashed circle had cut slightly farther into the planet. It was still aligned with its flattened face parallel to the rotation. He estimated the inner edge would not reach the planet's axis for several more hours at least. As it intruded farther, the hoop had to cut through more and more rock, which probably slowed its progress.

Doyle shifted the view, searching the southern polar region. A white dab of light was growing swiftly, coming toward them. It was a dim fleck compared with the brilliant cosmic string.

"Better get us buttoned up," Chansing said.

The scientists had fallen silent. The crew left hurriedly, each taking a last glance at the screen where two mysteries of vastly different order hung, luminous and threatening.

They ran, but they had no real chance. Five Alpha ships moved fast and hard, their ships taking accelerations beyond human pilots.

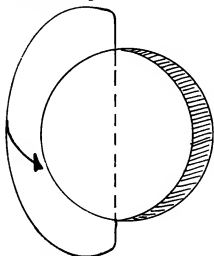
The scientists moaned and grunted in their harnesses as the high g's came on them. They wanted to know how things were going and got irritated when Chansing didn't answer. He wondered if they wanted a pep talk while he was trying to move fast and yet stay electromagnetically invisible. He finally had Doyle calm them down.

Not that it mattered. When the end was obvious, Chansing deployed their last hope of escaping detection: three blinding antennas mounted on the ship's hull. When the Alpha ship was close enough, he had a few tricks. Until then he simply held to their uniform electromagnetic blackout.

He was working on the hull when a signal came on comm from Doyle. "Something's happening with the hoop."

Chansing quickly made his way inside. The scientists were already devising new ideas to check, and some of them tried to tell him about it, but he brushed them off.

The vision that confronted him in the cool geometries of the control vault was mystifying. The hoop had nearly reached the polar axis, he saw. But it was not moving inward now. Instead, it seemed to turn as he watched. Its inward edge, razor-sharp and now ruler-straight, was cutting around the planet's axis of rotation. One screen gave a simulation, the hoop spinning about its flat edge.



"It slowed its approach to the axis," Doyle said. "When it got there, it started this revolving."

"Looks like it's getting faster," Chansing said.

"Yes. The magnetic fields are stronger now, too."

"Look, it's slicing around the axis."

"Like cutting the core from an apple."

"Revolving —"

"And picking up speed."

As he watched, the hoop revolved completely around the axis of Venus. The golden glow brightened further as if the thing was gaining energy.

"Pretty damn fast," Chansing said uselessly, wrestling to see what purpose such gigantic movements could have. His mind skipped and jangled with agitated awe. Chansing grimaced.

The hoop's inner edge was not exactly along Venus's axis. Instead, it seemed to stand a tiny fraction out from the line around which the planet itself spun. Chansing watched it revolve with ever-gathering speed. The hoop seemed like a part in some colossal engine, spinning to unknown purpose. It glowed with a high, prickly sheen as fresh impulses shot through it — amber, frosted blue, burnt orange — all smearing and thinning into the rich, brimming honey gold.

"I'm picking up a high whirring in the magnetic fields."

That is the inductive signal from the cosmic string's revolution. It is acting like a coil of wire in a giant motor.

"What for?" Chansing demanded, his throat tight. Without ever having set foot on it, he felt that Venus was somehow *his*, humanity's — and damned well not some plaything in a grotesquely gargantuan engine.

I cannot understand. Clearly, it moves to the beckon of some unseen hand. Strings are supposed to be quite rare, and should move at very near the speed of light. If one wandered into the galaxy, it might well collide with stars and molecular clouds. That would slow it. Perhaps this one did, and somehow the Alphas captured it in a trap of magnetic fields. A supremely difficult task, of course, beyond the scope of things human — but not, in principle, impossible. It merely demands the manipulation of magnetic field gradients on a scale unknown —

"What's your point?" Chansing demanded. Though the Advisor-talk streamed through his mind with blinding speed, he had no patience for the smug, arched-eyebrow tone of Felix's little lectures.

Simply that the cosmic string is clearly employed here in some sort of civil engineering sense. Doyle detects the inductive fields from its revolving, but surely this cannot be the purpose. No, it is a side effect. Note how the straight inner edge of the circle stops short of exactly lying along the planet's axis. This cannot be a mistake, not with engineers of this ability. Clearly, the offset is intended.

The hoop revolved faster and faster. Through Doyle's comm line he could hear the distant *whump-whump-whump* of magnetic detectors in the control vault.

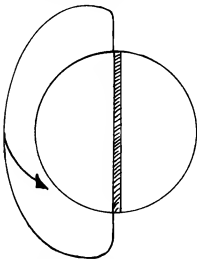
"A giant engine? What for?" Chansing persisted.

The region near the pole is the most affected, I would venture. This quick revolution evokes a pressure all around the polar axis. The faster the string revolves, the more smooth is this pressure. It slices free the rock close to the axis. This liberates the inner core cylinder it has carved away, frees the rock. The results of this I cannot see, however.

"Humph!" Chansing snorted in exasperation. "Let me know when you have an idea."

They did not have long to wait. The Alphas were more than an hour from rendezvous when the central axis tube, formed by the revolving cosmic string, pulsed with fresh brilliance.

Chansing listened to the scientists and got some idea of what might be happening. Still, even though he could see it, the truth was hard to believe. He stared at the four-color simulation.



The liquid oozing of rock far below, at the planetary core, pressed hard against the beating *sssttttpppp-sssttttpppp-sssttttpppp* of the revolving, scintillant hoop. In one revolution the white-hot nickel-iron liquid at the core flowed into the depressurized cylinder. Then the passing hoop chopped it off, liberating it from the pressure of fluid behind it. The pipe was filling.

The whirring hoop formed a blurred donut envelope around Venus, moving with the mad buzzing frenzy of a huge insect. Now the flux tube hummed with new life deep in the rock of Venus. The tube walls kept back the pressing solid rock on all sides — except at the core, where immense pressures forced more metal into the tube with each revolution.

Vast stresses fought along the tube walls. The strumming tube gnawed, burning a cylinder of stone free of its mother world. Liberated pressures pushed the freed rock upward from below. The axial flux tube filled.

Then its pearly, transparent walls of force dulled to gray. A plug of rock was streaming out.

The golden lance had now struck a tube into the center of this world, to its treasure. The tube throat was artfully shaped, fattening slightly as the white-hot metal funneled up from the core. The gusher flowed without restraint or turbulence, molten metal rushing from the vast core pressure to the void of space. The riches squirted up and out, fleeing the groaning weight of Venus.

Delicate streamers of green and amber danced amid the white torrent of metal — the only horde this planet boasted. The tube sucked this treasure above the blanket of gas.

Doyle made their view tilt, following a black fleck of impurity up the glowing pipeline, starward, into sucking void, high beyond air's clutching. There, flexing magnetic fields peeled away streamers, finding orbits for the molten pap. The yellowing, shuddering fluid, free of gravity's strangle, shot out into the chill. Returned to the spaces it once knew, the metal cold-formed, mottled, its skin crusted with impurities. The birthing thread creaked and groaned in places as it unspooled. It fractured in spots, yet kept smoothly gliding along its gentle orbit.

Cooling, it grayed. Graying, threads formed into enormous webbed structures.

"They're . . . making a home," Chansing said hollowly.

"Sucking a whole planet dry," one of the scientists said. "No wonder they ignore us."

He found Doyle gazing at him raptly. Did she think he had a solution? Then he saw that she was simply sharing what both of them knew. They were competent and quick, but there were limits, and they were about to meet them.

He didn't trust anyone in the slim crew to handle their last-ditch blinding cannons. The bulky antennas were electromagnetically isolated from the rest of the ship, and they had to be commanded from someone directly on the hull.

So he did it himself. It meant delegating his primary responsibility of piloting — but there was going to be damn little of that to do unless they managed to fool the Alphas.

Chansing got himself into the command brace just as the Alpha craft began decelerating. Venus lay close below, beneath the shimmering whirl of the golden cosmic string.

He didn't have much experience with the gear, but then nobody did. This was black-tech stuff, secret stickers all over it.

But he had used similar, less powerful rigs in the asteroids to escape government regulators. He cross-correlated the dishes and waited. There wasn't long. Of the original five Alpha ships sent to intercept the Earth expedition team, only one craft came forward like a hornet, and when it was a few hundred kilometers out, Chansing fired his first concealing burst.

The tangle of electromagnetic fields was supposed to confuse and blind the very best microwave detectors, and elude other frequencies altogether.

Chansing never got a second shot.

He had only an instant before a violent *whoosh* drew him head-first out of his brace. He realized the air lock had fractured.

He windmilled his arms in the rushing air, whirling away from the shining skin of the ship. Tumbling. Spinning.

Small cries sought him. Screams. They were dying back in the ship.

Everyone had worn helmets, that was standard. But the Alphas had used something special. The bulkheads crackled with electrical surges. Lightning sought and fried the slow, vulnerable humans.

Chansing heard them die, horrible gasping pain forcing shrill pleas from their throats.

And time slowed for him. One of the attributes of a first-class pilot is the almost languorous extension of events in a crisis. For Chansing, all motion became silky, sure, with infinite time to consider possibilities. But no time to mourn those he could do nothing to help any longer. He found that the only one whose face came to his was Doyle. Then he carefully put the image aside.

He vectored hard to correct his plunge, and the jumble of impressions began to make sense. He hung above the dayside of Venus, near the north pole. Far below, the ruddy twilight stretched shadows of mountains across the beaten gray plains. All this lay behind the incandescent golden aura left by the cosmic string as it spun with endless energy. One edge of it arrowed straight down along the pole, impossibly straight. The other side bulged out far beyond the planet's equator.

The hoop spun faster than the eye could follow, making a hovering tapestry diffused over the entire world. Chansing could see no gray jet of matter spewing up along the polar axis. When the outflowing cylinders of yellow metal-lava struck the sucking vacuum in orbit, the glare and exploding fog were obvious, serving to obscure what fervid process was at work there.

Now he was going to get a close look. He was nearly over the pole, and far away, nearly over the soft curve of the world, hung vast gray warrens.

This he took in with the barest glance, unable to react, because something came looming into his view, swelling with the speed of its approach.

His own ship floated like a helpless insect beside a predatory bird as the Alpha craft slowed and stopped. The comparison came to Chansing because of both size and a certain tantalizing, evocative sweep of the larger ship's lines. It had flared wings made of intricate intersecting hexagons, as though

spun out from a single thread. Its forward hull bulged like a gouty throat, while the blackened thrusters at its rear puckered wide. While the Earth ship expressed mechanical rigidities, this huge craft seemed sculpted by minds expressing body symmetries and senses beyond his fathoming.

Speculation ceased. Something big rushed forth from a darkened oval hole in the craft's side, moving far swifter than a human could. It headed for him.

Chansing turned immediately and sped away. There was nowhere to go, but he was damned if he would wait to be caught. His turn brought into view the pole again, and the golden glow of the spinning hoop below. From this angle the shimmering covered the whole of Venus, a vast radiance beyond the puny concerns of a single fleeing man.

Chansing tried to angle away from the onrushing form and gain the small shelter of his own ship. But a quick glance behind him showed that the alien object was closing fast. He veered sideways once, then again, darting furiously in hopes that the oncoming thing could not match him. But at each turn it was closer, following him with almost contemptuous ease. It loomed so large now Chansing could see large straight sections of bossed metal, studded with protuberances. Between the riveted metal sections was a rough, crusted stuff that seemed to flex and work with effort.

He realized abruptly that the thing was *alive*, that muscles rippled through it. Six sheathed legs curled beneath it, ending in huge claws.

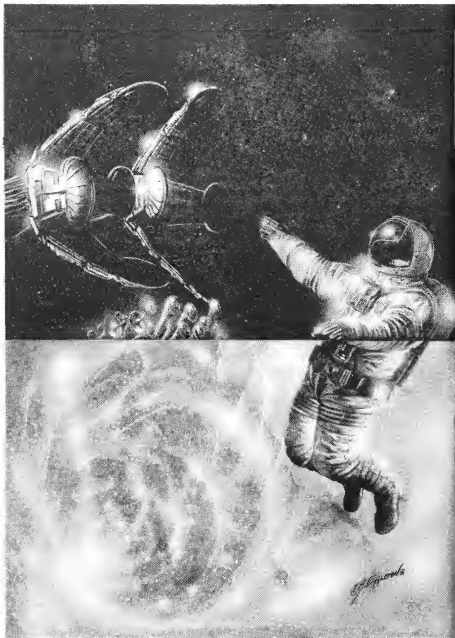
The head — Chansing saw eyes, more than he could count, moving independently on stalks. But beside them microwave dishes rotated. Above, telescoping arms socketed in shiny steel. They opened into many-grappling arrays of counter-posed pads.

The thing was at least ten times the size of a human. A bulging throat throbbed beneath stiff crusted gray-green skin. Its rear quarters were swollen as though thruster tubes lodged there. Yet they were also banded with alternating yellow-brown rings, like the markings of a living creature. Chansing was the first human to see an Alpha, and for an instant he was lost in curiosity. This was all he could think before the gaping pads spread farther to clasp him in a rough but sure embrace.

The thing brought him up toward its moving eye array. It studied him for a long moment. Chansing was so rapt upon the oval-shaped orange eyes that only after a while did he notice the steady tug of acceleration. The thing was carrying him, not back to its ship, but toward the pole. It tossed him from one oval array of pads to another, letting him tumble for seconds in space before snagging him again.

Like a cat playing with a mouse, his Felix Advisor had said mournfully.

Chansing's mind whirled, empty of terror and rage. He felt only a distant, painful remorse at all he was about to leave behind — laughter, silky love, a friend's broad unthinking grin, the whole warm clasp of the humanity he



had failed, and would now die for in a meaningless sacrifice to something beyond human experience.

He tried to wrench away from the coarse black pads, but they seemed to be everywhere. They pushed and caught him, in the growing golden glow that now suffused everything.

Then he came to rest in a thick knot of pads. They pressed against him so that he could not jerk away.

He wondered abstractly how the thing would kill him. A crushing grasp, or legs pulled off, or electrocution . . .

A rage came into him, then, and he tried to kick against the thing. He got a knee up into it and pushed, struck sidewise with his arms —

— and was free. Impossibly, he glided away at high speed from the long pocked form of worked steel and wrinkled brown flesh. It did not follow.

He spun to get his bearings and saw nothing but a hard glow. He was close to the hoop. No, not merely close — it surrounded him.

Chansing looked behind him. Above him hung the fast-shrinking alien. The thing now lay at the end of a glowing tube that stretched . . . stretched and narrowed around him as Chansing watched.

He was speeding along the planetary axis, down the throat of the pipe made by the whirring hoop. Shimmering radiance closed in on him.

He righted himself and fired jets. The alien had given him a high velocity straight down into the hoop tube. Plunging along the polar axis. If he could correct for it in time —

But the brilliant walls drew nearer. He applied maximum thrust to stop himself, even though that meant his fuel would burn less efficiently. His in-suit thrusters were small, weak, intended only for maneuvers in free fall.

The alien had so carefully applied accelerations that Chansing did not veer sidewise against the looming hoop walls. He was plunging precisely toward the pole of Venus. Through the shimmering translucent walls he could see a dim outline of Venus, as ghostly as a lost dream.

His thrusters chugged, ran smoothly for a moment, and then coughed and died. He fell in sudden eerie silence.

He had been simpleminded, thinking that the alien anthology of flesh and steel would kill him in some obvious way. Instead, from some great and twisted motive, it had given him this strange trajectory into the mouth of a huge engine of destruction.

At any moment, he supposed, the tube would vent more liquid metal outward. In an instant Chansing would vanish into singed smoke.

Vainly, he tried his sensorium. No human tracers beckoned. He grimaced, his breath coming rapidly in the sweat-fogged helmet.

The shimmering walls drew closer. He almost felt that he could touch them, but kept his arms at his side. He fell feet first, watching a small yellow dot between his boots slowly grow. His Felix Advisor remarked,

We are inside the bore of that tube that stretches out along the

polar axis. Let us hope the entire tube has been emptied by the alien mining operations. It appears we do have a quite exact trajectory. The alien sent us falling straight along Venus's spin axis. We may well fall all the way through the planet.

Chansing tried to think. "How . . . how long will that take?"

Let me calculate for a moment. Yes, I retain data on Venus. Which yields . . . I am performing the dynamical integral analytically . . .

Across Chansing's in-suit field of view appeared:

$$\text{time} = \left(\frac{\pi}{2} - \tan^{-1} \frac{V}{\sqrt{\frac{R}{3} \frac{4\pi}{3} \text{GP}}}} \right) \left(\frac{4\pi \text{GP}}{3} \right)^{-1/2}$$

Time to pass through to the other side of the planet is 36.42 minutes. I would advise you to start a running clock.

Chaning called up a time-beeper in his right eye, set it to zero, and watched the spool of yellow digits run. He grunted sourly. Let Felix the Advisor read it. Time was of no importance when the outcome was so barrenly clear.

Chansing fell.

He had long been used to the sensation of free fall, but always in the silent enormity of open space, or the confines of a ship.

It had been easy then to convince his reflexes that he was in some sense flying, airy and buoyant, oblivious to gravity's cruel laws.

Here . . . here he plunged downward between mottled glowing sheets that rushed past with dizzying speed. He *felt* the silvery rim of Venus thrusting up to meet him as the planet flattened into a plain and crinkled mountains grew, detail getting finer with every moment.

The exposed skin of Venus had a naked look, pale and barren beneath a sun it had not seen for billions of years. Its infernal cloak now gone, it lay open to cosmic rape.

Furrowed low hills stretched away, filling half his sky beyond the glowing translucence. The ravaged land was a rutted waste, already mauled by its inward collapse. The first plugs of metal-lava had sent vast quakes through her, leaving clouds of dust that were settling slowly over jagged scarps.

The ground hurtled up, a vast hand swatting at him, and he flinched automatically. He plunged toward a broad hillside —

— braced himself for the impact —

— and felt nothing.

Instantly, he shot through into a dim golden world, alone. The glowing walls gave off some light, but he could see nothing beyond them.

Far below, between his boots, was a single yellow point. Felix's voice came to him.

The tube formed by the revolving cosmic string is indeed empty. We are inside the planet now. I estimate our speed at 934 meters per second.

Dark mottled shapes soared up toward him and flashed soundlessly past in the walls. "Headed for what?"

If the alien cyborgs have constructed this miraculous planet-coring device with the precision I would expect of them, I predict we shall plunge entirely through the center and out to the other side.

"A cyborg?" Chansing asked, dazed.

Half-organic being, half-machine. I could not ascertain the exact proportions from such hasty observation, but —

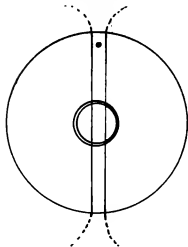
"Skip that! How can I get out of this?"

We cannot. By thrusting the cosmic string to very near the planetary axis, the cyborgs insured that there is no spin along this tube. Matter coming up from the core — or down from outside, as we are — will suffer no slow drift, and so should not strike the walls. In addition, uniquely to this choice they have adroitly made, there is no Coriolis force that would deflect us.

Chansing grimaced. It was all bad news. Despite the glowing walls, the light around Chansing was dimming.

He fought down rising panic. Part of his fear came from the simple fact that he was falling at greater and greater speeds, and sheer animal terror threatened to engulf him. He struggled against this like a man hammering at a dark wave that loomed higher even as he struggled. His breath caught and he forced his throat to open, his lungs to stop their spasmodic heaving.

Grainy, blurred shapes flashed past — features in the rock illuminated by the thin barrier of the rotating hoop. The yellow glare below had swollen to a brilliant disk. He could feel now through his sensorium a bone-deep bass *whuum-whuum-whuum-whuum* of the spinning magnetic fields.



"Maybe . . . maybe I can reach the walls. Is there any way I can slow down?"

Chansing felt Felix's sharp, peeling laugh. A circle appeared in his left eye.

It billowed into a sphere — Venus — with a red line thrust along the axis or revolution. A small blue dot moved inward near the top of the axis, just below the surface. The core brimmed a hot yellow.

We now have acquired a speed of 1,468 meters per second. The hoop material, remember, is extremely dense — many millions of tons packed into a thread that hardly spans more than an atom's width. If you were to strike that matter at our present speed, your hand would vaporize.

Chansing's breath came in fast, jerky pants, the fear creeping in. "Suppose they get some core metal in here, comin' out, and we meet it."

I don't suppose I have to analyze that possibility for you.

"No, guess not."

Chansing cast about for some idea, some fleeting hope. The walls were nearly dark now, the radiance of the hoop somehow absorbed by the rock beyond. Smouldering orange-brown wedges shot past — lava trapped in underground vaults, great livid oceans of scorching rock.

The hoop tube is standing empty; perhaps the cyborgs are working on some minor repairs. Or perhaps they simply pause to let the orbited teams that are fashioning the first batch of core metal do their work. In any case, assuming the cyborg above did not simply throw us in to see us boiled away by a gusher of iron, there is another fate.

Chansing tried to calm himself and focus on Felix's words. The walls seemed closer as he fell, the tube narrowing before him. He pulled himself rigid and straight, arms at his sides, feet down toward the yellow disk below that grew steadily. He blinked back sweat and tried to see better.

I believe we have passed through the crust and are now accelerating through the mantle. Note that the occasional lava lakes are getting larger and more numerous. By analogy with Earth, temperature increases inward until it exceeds the melting point of simple silicate rocks. Then — drawing on studies of similar planets — we will enter an increasingly dense and hot core. At this point the rocks will be fluid and at about 2,800 degrees Centigrade.

"What keeps them out of this tube?"

The hoop pressure, which is truly immense. I calculate —

"And the heat? The hoop stops that?" Chansing asked, seeking reassurance, though he already suspected the answer.

Heat is electromagnetic radiation, which hoop pressure alone cannot absorb. It passes through the walls — which is why we see now the dark rock beyond. Soon, though, the silicates will begin to glow with their heat of compression.

“What’ll we do?”

The heat radiation exerts a pressure. But this is symmetric, of course, acting equally in all directions. So it cannot push us toward one wall in preference to another. But it will cook us quite thoroughly.

“How . . . how long?”

Passage through the core . . . about 9.87 minutes.

“My suit — it’ll silver up for me, right?”

True, it already has. And I calculate we might survive one entire passage if we seal up completely, close your helmet visor, damp all inputs. Perhaps the cyborg understood that; it may know a good deal about our technology. Yes, yes . . . I am beginning to see its devilish logic.

Chansing shut down all his suit inputs. His suit skin reflected the blur of thickening light around him with a mirror finish. The walls rushing past were turning ruddy, sullen. **“Where are we?”**

We must be approaching the boundary at which iron melts. This color change probably signals the transition from the mantle to the outer core. We can expect some varying magnetic fields now, since this is the region — so theory says — where the planet’s field is born. Large tides of molten metal eddy about, carrying electrical currents, like great wires in a generator station. Venus’s spin serves to wrap these around, creating current vortexes, which in turn create magnetic whorls.

“Damn, it’s getting hot already.”

External temperature is 2,785 degrees Centigrade.

Chansing clicked his visor down and was in complete blackness. He wondered if he could stand the heat in utter isolation, falling faster and faster.

He again struggled to slow his breathing. If he was to live through even the next few minutes, he would have to think clearly, and the dark might even help that as long as he could keep his natural reactions from running away.

Luckily, the added speed imparted by the cyborg will take us through that much faster. I register external temperature now at well over 3,000 Centigrade. Here — one of the suit’s light pipes will give us a faint image, which is all we need in such a place.

“Damn all, *think!*”

I am. I simply do not see any way out of our dilemma.

“There’s gotta be *some* way —”

The existence of a well-defined problem does not imply the existence of a solution.

“Damn you!”

Felix was a disconnected intelligence, a mere voice from a chip buried in Chansing’s neck. There was no point in getting mad at it. The tiny remnant of a once-great mind could still take offense, refuse to help him, even though

that would mean that the chip-mind itself would be doomed.

"Look, we get through this, we'll be back outside, right?"

Yes. But that is the devilish nature of this cyborg's trick. We are participating in an ancient schoolboy's homework problem — a shaft through the planet, with us as the harmonically oscillating test mass.

"What . . ."

Chansing suddenly saw what Felix meant.

In his eye the blue dot shot through the core and on, out through the other side of the red tube. It rose toward the surface, its velocity dwindling in gravity's grip, then broke free of the surface and slowed further. But after hesitating at the peak, it began to fall again, to execute another long plunge through the heart of the spitted planet.

We can perhaps survive this one passage. But another, and another? — so on, *ad infinitum*?

"There's got to be a way out."

Chansing said this with absolute conviction. Even if a gargantuan alien had made this incinerating rattrap, still it could have made a mistake, left some small unnoticed exit.

He had to believe that, or the panic that squeezed his throat would overwhelm him. He would die like a pitiful animal, caught on the alien's spit and roasted to a charred hulk. He would end as a cinder, bobbing endlessly through the central furnace.

We might possibly try something at the very high point, when the hoop begins to curve over far above the pole. We should come to rest there for a brief instant.

"Good. Good. I can maybe pump some of the cooling stuff —"

Refrigerant fluids; yes, I see. Use them in our thruster. But that would not be enough to attain an orbit.

"How about the hoop? Maybe I could bounce off it up there, where it's spinning. I could pick up some vector, get free of the tube."

Chansing felt Felix's strangely abstract presence moving, pondering, as though this were merely some fresh problem of passing interest. Falling in absolute blackness, he felt his stomach convulse. He clamped his throat shut and gulped back down a mouthful of acid bile.

Now a strange sound came to him. The racheting *whuum-whuum-whuum* of the revolving hoop carried gurglings and ringing pops.

The long strumming sounds broke Chansing's attention. They seemed like majestic voices calling out to him, beckoning him into the utter depths of this world.

No. He shook himself, gasped, and switched the light pipe image into his left eye.

The walls outside bristled with incandescent heat, cherry-red. Globes of scorched red churned in the walls.

"Stop your calculatin"! Give me an answer."

Very well. The idea might be marginally possible. I cannot estimate with certainty. However, it would require that we be close enough to the hoop-formed wall. The cyborg has placed us exactly in the center of this tube, as I measure. We need to move perhaps a hundred meters before we will be within the pressure shock wave of the hoop as it turns.

"How far's that?"

A few hundred meters, I estimate.

"That's not so hard. I can use the cooler stuff —"

Extract it now and we will die in seconds.

"Damn all. I'll do it when we're clear, then."

That is tempting, but I fear it would not be effective. The tube opens as it rises toward the surface. Here, the tube wall is only a stone's throw away. By the time we are clear of the core, the walls will be too far to reach in time — unless we begin to move now.

"Yeah, yeah — *how?*"

Even a minute pressure applied now would give us enough push to reach the wall during the rise out. It is a matter of momentum.

"Pressure . . ."

Chansing frowned. The claustrophobic suit filled with the sound of his panting, his sour sweat, the naked smell of his fear.

He felt nothing but the clawing emptiness of falling, weightless. He squinted at the tiny image that came through the light pipe.

The walls outside were flooded with fire. The nickel-iron core only a short distance beyond raged and tossed with prickly white compressional waves. He flew close to livid pink whorls that stretched for tens of kilometers, yet passed in a few seconds of harsh glare. The hoop's constant *whuum-whuum-whuum* stormed in his teeth and jaw with grinding persistence. His tongue seemed to fill his throat, and the air was a choking, searing bite in his nostrils. The suit was close to overheating. He realized he was nearing the point where his own grip on himself would slip. He would do something rash to escape the heat, and he would die.

To this was added the gathering sense of menace as he shot down the immense bore-hole. Like all space workers, he had suppressed his fear of falling through long years of practice. But that was in the cool, serene perspectives of space. Here, he was flung by long streamers of glowing fire, racing downward at huge speeds.

But something Felix had said plucked at his memory. Even a minute pressure . . .

"The light. You said something about it pushing us."

Yes, of course, but that acts equally in all directions.

"Not if we turn some of the silver off."

What? That would — oh, I see . . . If we slightly lessen the silvering on the front of us, say, by robbing the autocircuits there of power . . .

yes, then the light will reflect less well. We will be pushed in that direction by the light striking us from behind.

“Let’s do it. Not much time.”

But the heat! Lessening the reflection heightens the absorption.

Chansing had already guessed that. “Show me how to taper down the silver on my chest.”

No, I don’t — the temperature outside, it’s 3,459 Centigrade! I can’t take —

“Give the info. *Now.*” Chansing kept his own mind under tight control. This was the only way, he felt sure of it, and seconds counted.

Not now, no! I’ll . . . I’ll think of something — something that will work — yes, work when we get through the core. I’ll review my back memories, I’ll —

“No. *Now.*”

He felt the Advisor’s fear, surging now nearly as strongly as his own. So the chip had finally broken, revealed the fragments of its residual humanity.

Deliberately, he reached within himself and smothered Felix. It called plaintively to him in a small, desperate voice. Chansing clamped down, forcing it back into a cranny of himself.

“*Now.*”

The yellow-white hell soared away above Chansing’s head. The walls nearly seeped a sullen red, but it was a relief after the incandescent fury that dwindled now, a fiery disk fading above him like a dimming sun.

Chansing panted deeply, though it seemed to do no good. Prickly waves washed over him, giving him unbearable itches that moved in restless storms across his skin. His lungs jerked irregularly. His arms trembled. It was as though his whole body was racheting in dying spasms, unable to cooperate any longer.

But he managed to keep his arms and legs straight. The light pressure would not have forced him in only one direction if he spun or tumbled.

Had it been enough? The long minutes at the core had crawled by, bringing agonizing lungfuls of heated air.

Now the heat ebbed slightly, but not much.

We are, after all, just another radiating body. We can only lose heat by emitting it as infrared waves. So we must wait for cooler surroundings before this intolerable heat can disperse.

His Felix Advisor seemed remarkably collected, given the hysteria that had beset it only minutes before. “How about the cooling thing?”

You mean our refrigerator? It can only function by ejecting waste heat at a cooler sink. There is no colder place to exchange heat with, you see.

“So we wait till we get out?” It seemed an impossibly long time. Between his boots he could see the blackness of the planet’s mantle, thousands of kilometers of dead rock they must shoot through before regaining the dark

of space itself. And there he would somehow have to make good this attempt, or else he would slow and pause and then plunge again. He wished again that he had saved his thruster fuel. It would give him some freedom, some hope of being something other than the helpless, dumb test particle in a grotesque experiment.

We do have some fluids we could eject, but —

“What? Look, we try everything. Got no hope otherwise.”

The refrigerant fluids. We could bring them to a high temperature and vent them.

“Think it’ll help much?” To lose the coolant meant he would have no chance whatever if he failed up ahead and fell back into the tube. He would fry for sure.

I cannot tell how much momentum we picked up from that maneuver. Pushing a large mass such as ourselves with mere light pressure —

Chansing laughed with a jittery edge. “I’m the mass here — you weigh nothin’ at all. And don’t you worry ’bout calculatin’ what’ll happen. Time comes, up at the top of this hole, I’ll have to grab whatever’s in sight. Fly by the seat of my pants, not some eee-quation.”

Then I should vent the refrigerant fluids?

“Sure. Bet it all!” Chansing felt small icy rivulets coursing along his neck as he let the Advisor take fractional control of his inboard systems.

I am warming the poly-xenon now.

“And when you spray it, just use the spinal vents. That’ll give us another push in the right direction. Could make the difference.”

Oh. I see. I did not think of this possibility.

“Trouble with you Advisors is you can’t imagine anythin’ you haven’t seen before.”

Let us not debate my properties at quite this time. We are rising toward the surface, and you must be ready. I believe the wall you face is nearer now. Notice the sparkling?

“Yeah. What’s it mean?”

That is where the mantle rock is forced by sidewise pressure against the passing cosmic string. Somehow the rock is held back. Clearly, the cyborgs must relax this hoop pressure somehow, down in the core, in order to fill this tube with the liquid iron we saw before.

“Maybe they just slow it down some? Let the iron squish in a li’l ’fore the next time the string comes whizzin’ by?”

Chansing fumbled with the suit refrigerator controls. He knew he had to understand more about the hoop, get some idea of how to use it.

Possibly. Clearly, the rotating string exerts great pressure against these rocks.

Chansing watched the quick flashing in the walls. For him to see these sparks at all, they must be enormous, since his reeling, relentless speed took

him by kilometers of the ruby-red rock in an instant. Still he felt the dizzying velocity. It threatened to make him throw up, and he had to clench his throat against that.

He saw from the 3-D simulation Felix ran in his left eye that he was rising toward the surface, slowing as gravity asserted itself.

He had to find a way to escape the tube, but no idea came to him. He had nothing he could throw to gain even a tug of momentum. The coolant jet throbbed behind him, but relative to the blur of motion in the walls he could not tell whether it did any good. It occurred to him that if he was too successful, he would crash into the speeding wall and be torn to pieces in an instant. Somehow the abstract nature of these things, the dry, distant, physics-experiment feel, frightened him all the more.

The tube is flaring out. We are approaching one side of it, but I cannot judge our velocity well. As we rise, the hoop curves away to make its great arc outward. The majesty of it is impressive, I must say.

"Forget that. What can I *do*?"

I am trying to see how we can use our situation, but I must say that a solution continues to elude me. The dynamics —

"We're getting close."

The rock around him had already ceased to glow, and beyond the walls lay complete darkness. The tunnel was broadening. He saw it by the steady golden aura, a shimmering passage that led away both up and down.

Again he thought of what would happen if he could do nothing up ahead. The cool logic of dynamics would, Felix said, fling him back into the core. The heat would kill him on the next pass, or if it only managed to send him into delirium, there would be another cycle, and another, and another. . . . He would bob endlessly, a crisp cinder obeying simple but inexorable laws. . . .

And then instantly he was swimming in light.

Stars bloomed beneath his feet. A bowl of brilliant gas and suns opened below him as he shot free of the planet's grasp, above the twilight line. After the sultry darkness, this sky was a welcoming bath of colors and contrasts.

Out, free!

He could feel his suit cool as it lost heat to the cold sky. It went *ping* as joints contracted. Wrinkled hills rose above his head, the whole naked landscape stretching as it drew away.

The golden walls fell away from him on one side, but in front of him the radiance did not fade or recede. It was much closer. He *had* gained some significant speed, then.

But now he was losing his speed along the tube. He watched the planet above his helmet turn into a gigantic silvery bowl. The dawn line cut this bowl in half. As he rose, Venus's curve brought into view the immense gray orbital works of the Alphas.

His rate of rise dwindled. The far side of the hoop tube was bending away. In front of him the glow was brighter, and he took a few moments to be sure

he was in fact curving over along with the hoop walls. Could he see the flicker of motion from the rapidly rotating string? He had begun to think of the walls as solid, and now he became aware of their gauzy nature.

The cosmic string can exert pressure only when it is very near you, of course. Until now you were moving with respect to it at high speeds. Now you will have a low relative speed, but only for a brief moment.

"You save any of that cooler stuff?"

Yes, but there is very little.

"Get ready."

Already he could detect no further shrinking in the wrecked face of Venus below. He must be near the top of his swing.

"Firing!"

He felt the jetting pressure at his back. The glowing hoop tube curled away like an opening funnel. Beyond, he could see the gossamer surface generated by the globe-spanning cosmic string. It appeared now to wrap the world in a rainbowy strangle hold.

The venting at his spine gurgled to a stop.

Whuum-whuum-whuum.

A vibrant, intense glow was all around him. He windmilled his arms and brought his boots down toward the golden surface. It pulsed with freshening energy. He felt as though he was a fragile bird, vainly flailing its wings above a sheet of translucent, wispy gold. Falling toward it. Performing his own sort of experiment . . .

The impact slammed him hard. It jarred up through his boots like a rough, wrenching punch. He had crouched, letting his legs absorb the momentum. Suddenly, he was shooting along the surface of the sheet.

It has conveyed impulse to you, an infinitesimal fraction of its spinning energy.

Chansing felt himself loft slightly higher, then come down toward the sheet again. He had shot sideways, away from the polar axis, going out on a tangent like a coin flung off a merry-go-round.

He hit again.

This time the jolt twisted his ankle. It felt like a hand grabbing at him, then losing its grip. But it gave him another push out.

I estimate you are gaining significant velocity from these encounters. It is difficult to calculate, but —

Chansing ignored the tiny piping Advisor. His ankle ached. Was it broken? He had no time to bend over and feel it. The shimmering plain came rising toward him again, hard and flat.

This time the shock was greater. It caught his feet and flung him off at an awkward angle, twisting him with a wrenching stab of pain.

You will have to be more careful as you set down upon it. It can convey spin, but if your velocity is not aligned with its, there is a vector

coupling, a torque —

“Shut up!” he cried in pain and frustration. He did not want to set down on the golden surface again, the ghostly curtain that could clutch and break him. But the velocity he was picking up from the thing flung him sideways, not up. Only his own rebounding through his knees kept him above the flickering radiance. If he slipped, tumbled, went shooting across the damned thing as he spun out of control —

The golden sheet rushed at him.

He struck solidly. This time his left leg shrieked with pain, and he barely managed to kick free. The glow immersed him, and he saw he was going to fall again soon. He windmilled. This time the shock was not as great, but the muscles of his left leg seized up with an agonizing spasm.

He blinked away sweat. A weakness came over him and his ears rang. He wearily spun himself again, using his arms, slower this time because the motion hurt his leg.

He expected to hit quicker, but the jolt did not come. He looked down and could not judge the distance. The glow had dimmed. It took a long moment before he realized that the sheet was curving farther away from him, wrapping down to follow the arc of the planet.

He was free. Out. In the clean and silent spaces.

We are on a highly elliptical orbit, I gather. It should take us at a significant angle with respect to this hoop plain. I cannot calculate the details, so it may be that we will return within its volume.

“Never mind,” he said, panting.

We will need the information in due time, however.

“I doubt it. Look up.”

Obsessed with its own mathematics, the Advisor piped with surprise as it responded to what Chansing saw.

Above them floated the long, sleek metallic body of the cyborg.

He had not intended to be the butt of a thousand jokes, and still less did he appreciate being the example cited in physics textbooks.

Some of the jokes turned upon childish anal analogies, others upon the sheer helplessness of his situation.

But he *had* done something very nearly impossible.

The Alpha that plucked him from above the shimmering veil of the rotating cosmic string explained nothing. It simply returned him to the gutted hulk of his ship.

At first he thought the rest of the expedition was dead. Electrical overload had seared the inner chambers.

But in the control center he found a metal equipment shell sealed from the inside. He popped it open and there was Doyle, crouched and ready in case he had turned out to be an Alpha. She had gotten herself into the shell as a precaution, guessing that the Alphas would use induced lightning as a

weapon. Electricity can't penetrate inside a conductor.

They shared the awful job of storing away the bodies. Chansing found himself staring into their contorted faces for a long time, trying to read meaning into their last moments.

With a week's work Chansing and Doyle were able to get ship systems running again. They limped away from Venus and were picked up three weeks later. By that time Chansing was in pretty bad shape and needed a lot of medical attention. The media attention was less agreeable to him.

Earthside authorities were incensed, of course, but there was little they could do. Earth massed its transmission power and beamed messages at the still-growing Alpha webworks in orbit about Venus. After wasting time on acrimonious insults, the bureaucrats asked a few pointed questions. Surprisingly, the Alphas deigned to reply.

Had the Alphas truly intended to kill the crew?

Yes.

Had they intended to kill Chansing?

Yes, doubly yes.

Why?

No answer.

Why had they finally saved him?

Because he displayed (untranslatable) and proved himself (untranslatable).

Could they admit another scientific team to study their great works?

They could not say, truly. Perhaps another team would like to try?

Well, then, would the Alphas guarantee their safety?

That depended. Could the humans guarantee that their team would display (untranslatable)?

Well, what *was* (untranslatable)?

In reply the Alphas sent a picture of Chansing.

Much discussion followed this. Could the Alphas not generalize from the particular to the general? That would explain why they sent a picture of a single person when they were asked for a general property.

Or did their philosophy simply not hold the belief that experience could be chopped up into categories?

This last seemed unlikely, given their ability to manage the huge mass and power of the cosmic string. Science itself depended on mathematical generalizations. The ability to generalize *was* intelligence, wasn't it?

Still . . . Did anyone want to gamble his or her life on the turn of a philosophical point?

So the Alphas continued to gut the world that was once linked with beauty and feminine grace. They pulled the rich metal core free and freeze-formed their own vast gray cities, for reasons still unknown. Though they shared the solar system, they took no further notice of humanity.

Chansing remained the only person who had ever seen an Alpha. And no

one tried to repeat his performance.

He quickly tired of publicity, the questions, the fame, the money, the women, the incessant buzzing attention. He went in search of Doyle, after the noise had died down, and she was everything he had hoped.

He successfully resisted public appearances by simply pointing out that he never flew anywhere. Never mind that he had been a pilot once.

He bought a large, comfortable home on ample wooded grounds in northern China. Doyle furnished it during layovers between her ongoing career as a pilot. It is a single-storied, pine construction with handsome teak walls, and has no stairs. Nowhere in the house is there an elevated floor.

Chansing is cordial to guests and in later years has adopted the curious practice of going everywhere in a powered wheelchair. Though his legs are sound, he rarely stands up.

He takes his exercise in other ways. There is a swimming pool, but no diving board. ❶

THE LITERARY CAREER OF GREGORY BENFORD: Current Directions . . .

I'm usually described as a "hard" science-fiction writer — not, I hope, because I'm difficult to get along with (though sometimes I wonder).

The term usually describes those of us who like to play the SF like a tennis game, with the net always up. Modern science is a dense thicket of fact, theory, and unspoken assumptions. Traversing the face of such a monolith requires care and daring . . . and homework.

There are degrees and kinds of hardness, of course. Descriptions of dramatic events aboard the US shuttle craft, for example, can be factual enough — but they're basically about technology, not science. Similarly, the techno-changes constantly churning about our urban landscape are the surface ripples of deeper forces, particularly the waves of scientific discoveries made some time ago. It takes at least a generation for a major scientific breakthrough to filter down through to the gritty end product, a new working device. So a lot of SF focuses on the more apparent, human-centered face of the modern — our gadgets.

Lying beneath those passing techno-ripples are the sea changes of our own world views. Science increasingly frames our very ideas about who we are and what it all means. (There's a sure sign of this. No business advertises its products with endorsements from the religious community, say, which a few centuries ago was the citadel of received wisdom. Nowadays we see actors in white lab coats telling us that some toothpaste is *scientifically* better.)

Writing about that is harder, particularly because the scale of science now dwarfs human affairs. Hard SF writers often must thrust their characters into bizarre environments to get at fundamental scientific matters.

"Alphas" sprang from my reading about a new, odd entity thought to be left over from the very earliest split seconds of our universe. The theory of cosmic strings is less than five years old, and nobody has yet seen one. We can trace mathematical clues that they *may* exist; such things are buried deep in the equations that attempt to unite particle physics and gravitation. They *may* help explain the clustering of galaxies.

But that wasn't what intrigued me about them. Though the theorists have concentrated on cosmic strings of immense size, at least a galaxy's width, I wondered about smaller strings. (Incidentally, there's another animal in the mathematical zoo with a similar name, particle strings. These are incredibly smaller than an atom but have no relation to cosmic strings. The similarity in name arises from their both being long and thin, and the paucity of imagination among the name-givers.)

We believe huge cosmic strings can shed energy, contracting, until they either stabilize (which I assume) or literally evaporate away in a shower of electromagnetic radiation. (I elected to neglect this possibility, but it *would* make a dandy weapon for some of the more military SF writers.)

All that led to "Alphas," a study in alien motivations and mechanisms. I also explored the idea further in my most recent novel, *Tides of Light*. Cosmic strings are raw science, here shaped into a kind of technology. I couldn't resist the urge to be the first SF writer to use them. I doubt that I'll be the last.

... and Past Achievements

Jupiter Project. Nelson, 1975; British edition: Sphere, 1982.

If the Stars Are Gods, with Gordon Eklund. Berkley, 1976. Nebula-Award winner, 1976.

In the Ocean of Night. Dial Press, 1977.

Timescape. Simon and Schuster, 1980. Nebula-Award winner, 1980.

Against Infinity. Simon and Schuster, 1982.

Across the Sea of Stars. Simon and Schuster, 1984; British edition: MacDonald, 1984.

Artifact. Tor, 1985.

Heart of the Comet, with David Brin. Bantam, 1986.

In Alien Flesh, a short-story collection. Tor, 1986.

"Freeze-frame," short story. *Amazing Stories*: May 1987.

Great Sky River. Bantam, 1987.

Tides of Light. Bantam, 1989.

Inflections

The Readers

Dear Editor,

Darrell Schweitzer's article on fantasy in the September issue makes some good points, but unfortunately, his basic thesis has as many holes in it as a window screen.

"Science fiction became a genre in 1926 when the first issue of *Amazing Stories* appeared," he claims, but "fantasy did not become a genre until about 1970" when mass-market paperback fantasies appeared. He's comparing apples to oranges. If science fiction was a genre when the first *Amazing Stories* appeared, then fantasy was a genre in 1919, when the first issue of *Thrill Book* appeared, or at least in 1923 with the first issue of *Weird Tales*. That first incarnation of *Weird Tales* lasted 31 years; only three science-fiction magazines, *Amazing Stories*, *Analog*, and *F&SF*, can claim longer runs, and pulp magazines didn't last unless they had an audience. It was not until recently that it was as large a genre as written science fiction, but it was a genre.

I specifically mention *written* science fiction because fantasy was a movie genre long before science fiction. The Universal-Realart series about Dracula, the Mummy, and the Wolfman were far more popular than anything in science fiction except the same company's Frankenstein epics. There were highbrow fantasies in the movies as well: *On Borrowed Time*, the frequently remade *Thief of Baghdad*, and others.

Even in books, Darrell mentions

James Branch Cabell as a "literary" writer — though he was also a very popular one — but somehow omits Thorne Smith, whose best-selling fantasies were being made into movies when Robert A. Heinlein was still deciding on a permanent occupation. I do hope Darrell won't try to convince me that Smith's books are "literature"; I've read them. They sold both because they were fantasy and — for the time — soft-core porn, every bit as unliterary as most current offerings. Of course, eventually, he became what Darrell calls a "brand name" writer, but nobody starts out as any sort of name; popularity has to come first.

Darrell mentioned several fantasy novels that have "dropped into obscurity." But *Full Circle* had a paperback reprint and *The Twenty-Fifth Hour* a magazine reprint well before Darrell's starting point for the fantasy genre; if they've been forgotten, it's been during the years that he says fantasy has become commercial. McHugh's *I Am Thinking of My Darling* also had a pb reprint in Darrell's "pre-genre" days, and has had none recently. None of Darrell's major points will hold water.

Yours,

Robert "Buck" Coulson
2677W-500N
Hartford City IN 47348

Dear Buck,

Nonsense. The reason fantasy didn't become a genre (in the strictly economic/publishing sense) with the

publication of the first issue of *Weird Tales* (or *Unknown* or *Strange Tales* or *Beyond Fantasy Fiction*) is simply that the majority of writers were not dependent on the category magazines. The really major fantasy writers of the 1920s and '30s, say, James Branch Cabell, Lord Dunsany, Algernon Blackwood, E. R. Eddison, Arthur Machen, Walter de la Mare, John Collier, John Buchan, and so many others, including, yes, Thorne Smith, went on writing for book publication, and their works were categorized as general fiction. (With the possible exception of Smith, who was seen as a humorist. Yes, I know Blackwood had a couple stories in *WT* and Machen was reprinted there.) That *Weird Tales* and the others *did* develop significant writers of their own and contribute to the larger body of fantasy is another matter entirely.

The early science-fiction writers wrote for the pulp magazines. There were few exceptions. John Taine was still able to achieve book publication early on, but, significantly, his *Astounding* serial, "Twenty Eighty-Seven" (1935), was not reprinted by his regular book publishers. A few of the older generation of *Argosy* writers like Otis A. Kline and Ray Cummings could sometimes make it into book form, but this largely ceased by the middle '30s. There were of course a few mainstream wander-ins like Aldous Huxley's *Brave New World* (1932), John Collier's *Tom's A-Cold* (1933), and Herbert Best's *The Twenty-Fifth Hour* (1940), but after Gernsback it was pretty much true that a science-fiction writer was someone who wrote for the science-fiction pulps, and science fiction itself could be roughly defined as the sort of material that

appeared in *Amazing Stories* and *Astounding*.

This was not true of fantasy then; nor was it true in the '40s and '50s, when Tolkien, Peake, and T. H. White were writing; nor was it true as recently as 1968, when Peter Beagle's *The Last Unicorn* appeared as a general hardcover. That late, "fantasy" books were still being published as mainstream, as juveniles, or (as was, for instance, Avram Davidson's *The Phoenix in the Mirror* in 1966) as science fiction.

No, fantasy didn't become a commercial category until the Ballantine Adult Fantasy series. And you'll recall that Lin Carter had a lot of explaining to do at the time because the very idea of a fantasy category was new. The "Adult" was in there to tell people that these books were not fairy tales for children. But then people had to be reassured that the books were not porno!

Generic publishing of fantasy books had simply never been tried.

Best,

Darrell Schweitzer
113 Deepdale Road
Strafford PA 19087

Readers, please continue to send us your letters. We'd like to read about your likes and dislikes; this way we can better serve your needs. After all, you are reading this magazine for personal enjoyment. Also, feel free to respond to other issues — be they about writing, the SF and fantasy community, or the state of affairs in the world at large. We do value your opinions, though we may not agree with them. So, write to us!

Till next issue.

— Patrick Lucien Price

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